

264-1160

6/19/2014

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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
WASHINGTON, D.C. 20460

OFFICE OF  
PREVENTION, PESTICIDES  
AND TOXIC SUBSTANCES

JUN 19 2014

Ms. Tammy Zimmer  
Bayer CropScience LP  
2 T. W. Alexander Drive  
P. O. Box 12014  
Research Triangle Park, NC 27709

Subject: QRD 146  
EPA Registration No. 264-1160  
Fast Track Label Amendment of December 11, 2013  
Updated June 18, 2014  
Decision No. 486847  
and  
Supplemental Labeling Request of March 31, 2014  
Updated June 17 and 19, 2014  
Decision No. 490240

Dear Ms. Zimmer:

The Agency has reviewed your request to amend the subject product registration, which included the following change to the product label:

- new sublabel A text prohibiting certain uses in the State of California
- a new Master Label cover page notation discussing bracketing of optional label language

The Agency has also reviewed your request for supplemental labeling for agricultural field uses on cucurbits.

The amendments referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) section 3(c)(5), are acceptable provided that you:

- Submit and/or cite all data required for registration/registration review of your product under FIFRA section 3(c)(5) when the Agency requires all registrants of similar products to submit such data.
- Submit two (2) copies of your final printed labeling before you release the product for shipment. Refer to the A-79 enclosure for a further description of a final printed label.

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Your release or shipment of the product bearing the amended labeling constitutes acceptance of these conditions.

A stamped copy of the label and labeling are enclosed for your records. Should you have questions or concerns, please contact me or Denise Greenway, of my staff, at (703) 308-8263 or via [greenway.denise@epa.gov](mailto:greenway.denise@epa.gov)

Sincerely,



Kimberly Nesci, Chief  
Microbial Pesticides Branch  
Biopesticides and Pollution  
Prevention Division (7511P)

Enclosures (3)

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# QRD 146

[Alternate Brand names: Serenade® OPTIVA®, OPTIVA®, SERENADE® OPTIMUM, Serenade® Opti]

## MASTER LABEL

Sub-label A: Agricultural/Commercial Use  
Sub-label B: Agricultural Use – Mushroom Production Only

<b>ACTIVE INGREDIENT:</b>	
QST 713 strain of <i>Bacillus subtilis</i> *	26.2%
<b>OTHER INGREDIENTS</b>	73.8%
<b>TOTAL:</b>	100.0%

\*Contains a minimum of 1.31 x 10<sup>10</sup> cfu/g

EPA Reg. No. 264-1160

EPA Est.

## KEEP OUT OF REACH OF CHILDREN CAUTION

For MEDICAL and TRANSPORTATION Emergencies ONLY Call 24 Hours A Day 1-800-334-7577  
For PRODUCT USE Information Call 1-866-99BAYER (1-866-992-2937)

[Note: All text in brackets is optional language for the final printed container label.]

Bayer CropScience LP  
P.O. Box 12014, 2 T.W. Alexander Drive  
Research Triangle Park, North Carolina 27709

# ACCEPTED

JUN 19 2014

Under the Federal Insecticide, Fungicide,  
and Rodenticide Act, as amended, for  
the pesticide registered under  
EPA Reg. No.

264-1160

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# QRD 146

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WETTABLE POWDER BIOFUNGICIDE  
SUB-LABEL A

For Agricultural/Commercial Use Only

ACCEPTED

EPA Reg. No. \_\_\_\_\_  
The pesticide registered under  
and Reregistration Act, as amended, for  
Under the Federal Insecticide, Fungicide,

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# QRD 146

[Alternate Brand names: Serenade® OPTIVA®, OPTIVA®, SERENADE® OPTIMUM, Serenade® Opti]

[A Wettable Powder Biofungicide]  
 [Optional/Alternate Statement: "NOP Logo: For Organic Production"]  
 [Optional/Alternate Statement: "NOP Logo: Can be Used for Organic Production"]  
 [USE INDOORS AND OUTDOORS]  
 [USE IN FIELD APPLICATIONS, GREENHOUSES, NURSERIES, SHADE HOUSES, LANDSCAPES, INTERIORSCAPES, SEEDLING PRODUCTION SITES, AND FOREST SEEDLING PRODUCTION SITES]  
 [USE IN TANK MIXES OR ROTATIONAL ALTERNATING SPRAY PROGRAMS WITH OTHER CROP PROTECTION PRODUCTS]  
 [USE IN RESISTANT MANAGEMENT PROGRAMS]  
 [USE GROUND, AERIAL, CHEMIGATION AND HAND APPLIED EQUIPMENT]  
 [FOR AGRICULTURAL USE]  
 [FOR USE ON ORNAMENTALS, TREES, SHRUBS, TURF, LAWNS, SOD, GOLF COURSES (GREENS, TEES, FAIRWAYS AND ROUGHS), SEEDLINGS, AND CONIFERS]  
 [USE IN PRODUCTION OF CONIFERS FOR REFORESTATION]

<b>ACTIVE INGREDIENT:</b>	
QST 713 strain of <i>Bacillus subtilis</i> *	26.2%
<b>OTHER INGREDIENTS</b>	73.8%
<b>TOTAL:</b>	100.0%

\*Contains a minimum of 1.31 x 10<sup>10</sup> cfu/g

EPA Reg. No. 264-1160

EPA Est.

## KEEP OUT OF REACH OF CHILDREN CAUTION

For MEDICAL And TRANSPORTATION Emergencies ONLY Call 24 Hours A Day 1-800-334-7577  
For PRODUCT USE Information Call 1-866-99BAYER (1-866-992-2937)

### FIRST AID

<b>IF IN EYES:</b>	<ul style="list-style-type: none"> <li>• Hold eyes open and rinse slowly and gently with water for 15 - 20 minutes.</li> <li>• Remove contact lenses, if present after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF ON SKIN OR CLOTHING:</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin with plenty of water for 15 - 20 minutes.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>
<p>In case of emergency call toll free the Bayer CropScience Emergency Response Telephone No. 1-800-334-7577. Have the product container or label with you when calling a poison control center or doctor, or going for treatment.</p>	

Bayer CropScience LP  
P.O. Box 12014, 2 T.W. Alexander Drive  
Research Triangle Park, North Carolina 27709

[Reference Statement for Booklets: For ADDITIONAL PRECAUTIONARY STATEMENTS and DIRECTIONS FOR USE: See Inside Booklet. See FIRST AID STATEMENT on the back panel.]

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[USE OF PRODUCT INDICATES ACCEPTANCE OF "CONIDTIONS FOR SALE AND WARRANTY"]

## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS & DOMESTIC ANIMALS

#### CAUTION

Causes moderate eye irritation. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

### PERSONAL PROTECTIVE EQUIPMENT

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

Mixers/loaders and applicators must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow manufacturer's instructions for cleaning and maintaining PPE. If no instructions are available, use detergent and hot water for washables. Keep and wash PPE separately from other laundry.

### [OPTIONAL: ENGINEERING CONTROLS]

[OPTIONAL STATEMENT: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides, the handler PPE requirements may be reduced or modified as specified in the WPS.]

[IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment break-down.]

### USER SAFETY RECOMMENDATIONS

#### Users should:

- Remove clothing/PPE immediately if pesticides get inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### ENVIRONMENTAL HAZARDS

For terrestrial uses: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate. Do not apply when weather conditions favor drift or runoff from treated areas.

### EMERGENCY INFORMATION

For emergencies such as leaks or spills, call 24-hour toll-free BAYER hotline at 1-800-334-7577.

### DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation. [For use only as described on this label. Not for isolation or reformulation. Do not culture.]

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### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries and greenhouses and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

**Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours.**

Exception: If the product is soil injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water is:

- coveralls
- waterproof gloves
- shoes plus socks

### NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses.

[Post harvest Applications:

Post harvest treatment of harvested agricultural plants does not fall within the scope of the WPS. An agricultural plant is considered harvested when 1) a desirable portion of the agricultural plant (seed, fruit, flower, stem, foliage, or roots) is detached from its parent or 2) a whole agricultural plant is separated from its growth media (soil, water, or other media).

PPE for applicators treating portions of harvested agricultural plants or handlers exposed to treated portions of harvested agricultural plants is waterproof gloves.

Keep unprotected persons from handling portions of harvested agricultural plants that have been treated until sprays have dried.]

[Commercial Treatment of plants that are in ornamental gardens, parks, golf courses, and public or residential turf and grounds, and that are intended only for aesthetic purposes or climatic modification:

Keep unprotected persons out of treated areas until sprays have dried.]

### BASIC USE INFORMATION

QRD 146 is a broad spectrum, preventative product for the control or suppression of many important plant diseases. Apply QRD 146 as a foliar spray alone, in alternating spray programs or in tank mixes with other registered crop protection products. [Apply QRD 146 as a soil drench alone or in tank mixes with other registered crop protection products.] When conditions are conducive to heavy disease pressure, use QRD 146 in a rotational program with other registered fungicides. Apply QRD 146 with spray equipment commonly used for making ground [or aerial] applications and sprinkler/irrigation systems commonly used for chemigation. Heavy rainfall or irrigation shortly after application may require retreatment. QRD 146 can be used for organic production.

[OPTIONAL STATEMENT: QRD 146 is most effectively used in a preventive disease management program. For improved performance, use QRD 146 in a tank-mix or rotational program with other registered fungicides. When using QRD 146 alone for the first time, use a rate of 2 lbs. QRD 146 per acre. Increase the application rate and/or decrease spray intervals of QRD 146 according to the application instructions depending upon disease pressure. [To enhance performance, consider adding a surfactant, known to be safe to the target crop, to the spray tank to improve penetration and coverage of above-ground portions of the plant.]

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## **INTEGRATED PEST MANAGEMENT (IPM)**

Integrate QRD 146 into an overall disease and pest management strategy whenever fungicide use is necessary. Follow practices known to reduce disease development. Consult local agricultural authorities for specific IPM strategies developed for your crop(s) and location.

Be sure use of this product conforms to resistance management strategies, which may include rotating and/or tank-mixing with other products with different modes of action.

## **USE RATE DETERMINATION**

Carefully read and follow all label directions, use rates and restrictions. Application of QRD 146 prior to or in the early stages of disease development provides the best control or suppression of the targeted plant disease. Use the stated maximum label rates and shorter spray intervals for conditions conducive to threatening or rapid disease development. [For proper application, determine the number of acres to be treated, the label use rate and select appropriate gallonage to give good canopy penetration and coverage of plant parts to be protected.] Prepare only the amount of spray solution required to treat the measured acreage. Accurate spray [alternate: chemigation] equipment calibration is essential prior to use.

## **PREHARVEST INTERVAL**

QRD 146 can be applied up to and including the day of harvest.

## **APPLICATION INSTRUCTIONS**

**GENERAL:** Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather-related factors determines the potential for spray drift. The applicator and the grower/treatment coordinator are responsible for considering all of these factors when making decisions. Where states have more stringent regulations, they should be observed. *Note: This section is advisory in nature and does not supersede the mandatory label requirements.*

**GROUND:** Be sure to maintain agitation during mixing and application to assure uniform product suspension. Thorough coverage of all foliage [alternate statement for soil uses: [and] soil surfaces] is essential for effective disease control. QRD 146 can be applied in commonly used ground equipment, hose-end, pressurized, greenhouse and hand-held sprayers. To achieve good coverage, use proper spray pressure, gallonage per acre, nozzles, nozzle spacing and ground speed. Consult spray nozzle and accessory catalogues for specific information on proper equipment calibration.

**AERIAL:** This product can be applied by aerial application. Refer to the Aerial Drift Reduction Advisory Information section of this label for general directions and precautions. Use the application rate indicated for the appropriate crop in sufficient water to achieve thorough coverage, typically between 3 – 20 gallons of water per acre depending upon the crop. Three gallons of water per acre is the minimum.

**CHEMIGATION:** This product can be applied through sprinkler (center pivot, lateral move, end tow, side (wheel) roll, traveler, solid set, and hand move) or drip type irrigation systems. Refer to the Chemigation Directions for Use section of this label for general directions and precautions. Use the application rate indicated for the appropriate crop as specified in the Application Rate tables of this label.

## **MIXING INSTRUCTIONS**

**MIXING:** QRD 146 must be diluted with water. Partially fill the spray tank with clean water and begin agitation. Add the specified amount of QRD 146 to the tank. Finish filling the tank to the necessary volume to obtain the proper spray concentration. It is critical that the spray solution be agitated during mixing and application to assure a uniform suspension. Do not allow spray mixture to stand overnight or for prolonged periods. [Optional Statement: Maintain a spray solution pH between 4.5 and 8.5.]

QRD 146 may be tank-mixed with other registered pesticides to enhance plant disease control. This product cannot be mixed with any product with a prohibition against such mixing. When tank-mixing QRD 146 with other registered pesticides, always read and follow all use directions, restrictions, and precautions of both QRD 146 and the tank-mix partner(s). Use of the resulting tank mix must be in accordance with the more restrictive label limitations and precautions. *Do not exceed label dosage rates.*

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**COMPATIBILITY:** Do not combine QRD 146 in the spray tank with pesticides, surfactants or fertilizers if there has been no previous experience or use of the combination to show it is physically compatible, effective and non-injurious under your use conditions.

QRD 146 is compatible with many commonly used pesticides, fertilizers, adjuvants and surfactants but has not been fully evaluated with all of these. To ensure compatibility of tank-mix combinations, evaluate them prior to use as follows: Using a suitable container, add proportional amounts of product to water. Add wettable powders first, followed by water dispersible granules, then by liquid flowables and lastly, emulsifiable concentrates. Mix thoroughly and let stand for at least five minutes. If the combination stays mixed or can be remixed, it is physically compatible. Test the combination on a small portion of the crop to be treated to ensure that a phytotoxic response will not occur as a result of application. [OPTIONAL STATEMENT: Do not use with penetrant-type adjuvants.]

**ADDITIVES:** QRD 146 is compatible with a wide range of additives. Since the product is primarily a protectant, thorough coverage of all above-ground plant parts is required for effective product performance. To improve plant surface coverage, add a nonphytotoxic adjuvant to spray tank.

## **CHEMIGATION DIRECTIONS FOR USE**

### **General Requirements:**

- 1) Apply this product only through sprinkler (including center pivot, lateral move, end tow, side (wheel) roll, traveler, solid set or hand move) or drip type irrigation systems. Do not apply this product through any other type of irrigation system.
- 2) Crop injury or lack of effectiveness can result from non-uniform distribution of treated water.
- 3) Ensure that the irrigation system used is properly calibrated and if you have questions, call the State Extension Service specialists, the equipment manufacturer or other experts.
- 4) Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
- 5) A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make any necessary adjustments should the need arise.

### **Requirements for Chemigation Systems Connected to Public Water Systems:**

- 1) Public water supply means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of 25 individuals daily at least 60 days throughout the year.
- 2) Chemigation systems connected to the public water systems must contain a functional, reduced-pressure zone (RPZ), backflow preventer or the functional equivalent in the water supply upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top of the overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.
- 3) The pesticide injection pipeline must contain a functional, automatic, quick closing check valve to prevent the flow of fluid back towards the injection pump.
- 4) The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- 5) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being filled with a system interlock.
- 7) Do not apply when wind speed favors drift beyond the area intended for treatment.
- 8) Remove scale, pesticide residues, and other foreign matter from the chemical supply tank and entire injector system. Flush with clean water. Failure to provide a clean tank, void of scale or residues may cause product to lose effectiveness or strength.
- 9) Do not combine QRD 146 with pesticides, surfactants or fertilizers for application through chemigation equipment unless prior experience has shown the combination physically compatible, effective and non-injurious under conditions of use. QRD 146 has not been fully evaluated for compatibility with all adjuvants or surfactants. Conduct a spray compatibility test if mixture with adjuvants or surfactants is planned.
- 10) Maintain agitation in the pesticide supply tank.
- 11) Apply QRD 146 during the last half of the water application.
- 12) Dilute QRD 146 in enough water to be able to draw through system for the last half of the water application.

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### **Sprinkler Chemigation Requirements:**

- 1) The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
- 2) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 3) The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- 4) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 5) The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 7) Do not apply when wind speed favors drift beyond the area intended for treatment.
- 8) Remove scale, pesticide residues, and other foreign matter from the chemical supply tank and entire injector system. Flush with clean water. Failure to provide a clean tank, void of scale or residues may cause product to lose effectiveness or strength.
- 9) Do not combine QRD 146 with pesticides, surfactants or fertilizers for application through chemigation equipment unless prior experience has shown the combination physically compatible, effective and non-injurious under conditions of use. QRD 146 has not been fully evaluated for compatibility with all adjuvants or surfactants. Conduct a spray compatibility test if mixture with adjuvants or surfactants is planned.

### **Center-pivot, Lateral Move, End Tow, and Traveler Irrigation Equipment (Use only with electric or oil hydraulic drive systems which provide a uniform water distribution):**

- Determine size of area to be treated.
- Determine the time required to apply no more than 1/4 inch of water (6,750 gallons water per acre) over the area to be treated when the system and injection equipment are operated at normal pressures recommended by the equipment manufacturer. Run system at 80 to 95% of manufacturer's rated capacity.
- Using only water, determine the injection pump output when operated at normal line pressure.
- Determine the amount of QRD 146 fungicide required to treat area.
- Add required amount of QRD 146 fungicide and sufficient water to meet the injection time requirements of the solution tank.
- Maintain constant solution tank agitation during the injection period.
- Stop injection equipment after treatment is completed. Continue to operate the system until QRD 146 fungicide solution has cleared the sprinkler head.

### **Solid-set, Side (wheel) Roll, and Hand Move Irrigation Equipment:**

- Determine acreage covered by sprinkler.
- Fill injector solution tank with water and adjust flow rate to use contents over a 10- to 30-minute interval.
- Determine the amount of QRD 146 fungicide required to treat area.
- Add the required amount of QRD 146 fungicide into the same quantity of water used to calibrate the injection equipment.
- Maintain constant solution tank agitation during the injection period.
- Operate system at normal pressures recommended by the manufacturer of the injection equipment and used for the time interval established during calibration.
- Inject QRD 146 fungicide at the end of the irrigation cycle or as a separate application to maximize foliar fungicide retention.
- Stop injection equipment after treatment is completed. Continue to operate the system until QRD 146 fungicide solution has cleared the last sprinkler head.

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## Drip Chemigation Requirements:

- 1) The system must contain a functional check valve, vacuum relief valve and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
- 2) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 3) The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- 4) The system must contain functional inter-locking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 5) The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 7) Remove scale, pesticide residues, and other foreign matter from the chemical supply tank and entire injector system. Flush with clean water. Failure to provide a clean tank, void of scale or residues may cause product to lose effectiveness or strength.
- 8) Do not combine QRD 146 with pesticides, surfactants or fertilizers for application through chemigation equipment unless prior experience has shown the combination physically compatible, effective and non-injurious under conditions of use. QRD 146 has not been fully evaluated for compatibility with all adjuvants or surfactants. Conduct a spray compatibility test if mixture with adjuvants or surfactants is planned.
- 9) Maintain agitation in the pesticide supply tank.
- 10) Apply QRD 146 during the last half of the water application.
- 11) Dilute QRD 146 in enough water to be able to draw through system for the last half of the water application.

## AERIAL DRIFT REDUCTION ADVISORY INFORMATION

**General:** Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions. Where states have more stringent regulations, they should be observed.

**INFORMATION ON DROPLET SIZE:** The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

**CONTROLLING DROPLET SIZE:** Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets. Pressure - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When high flow rates are needed, use higher flow rate nozzles instead of increasing pressure. Number of Nozzles - Use the minimum number of nozzles that provide uniform coverage. Nozzle Orientation - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential. Nozzle Type - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

**BOOM WIDTH:** For aerial applications, the boom width must not exceed 75% of the wingspan or 90% of the rotary blade. Use upwind swath displacement and apply only when wind speed is 3 – 10 mph as measured by an anemometer. Use medium or coarser spray according to ASAE 572 definition for standard nozzles or VMD for spinning atomizer nozzles. If application includes a no-spray zone, do not release spray at a height greater than 10 feet above the ground or the crop canopy.

**APPLICATION HEIGHT:** Do not make application at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

**SWATH ADJUSTMENT:** When applications are made with a crosswind, the swath will be displaced downward. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by

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adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.).

**WIND:** Drift potential is lowest between wind speeds of 3 - 10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 3 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

**TEMPERATURE AND HUMIDITY:** When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

**TEMPERATURE INVERSIONS:** Do not apply during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small, suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

**SENSITIVE AREAS:** The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas). Do not allow spray to drift from the application site and contact people, structures people occupy at any time and the associated property, parks and recreation areas, non-target crops, aquatic and wetland areas, woodlands, pastures, rangelands, or animals.

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**IMPORTANT: READ CONDITIONS FOR SALE AND WARRANTY BEFORE USE**

**FOR USE AS A FOLIAR SPRAY ON SELECT AGRICULTURAL FIELD CROPS  
AND SELECT AGRICULTURAL GREENHOUSE CROPS**

QRD 146 has a 0-Day PreHarvest Interval for all crops contained on this label.

Under moderate to severe disease pressure, for improved performance, increase rates and reduce spray intervals as stated or use QRD 146 in a tank mix or rotational program with other registered fungicides.

Application Rates of QRD 146 for Selected Field Crops			
Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
Artichoke	<b>Powdery Mildew</b> <i>Leveillula taurica</i> , <i>Erysiphe cichoracearum</i>	½ - 3 [alternate: 8 - 48 oz]	Begin application when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. QRD 146 may be applied up to and including the day of harvest.
	<b>Gray Mold</b> <i>Botrytis</i> spp.		
	<b>Bacterial Crown Rot</b> <i>Erwinia chrysanthemi</i>		
Asparagus	<b>Rust</b> <i>Puccinia asparagi</i>	½ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. QRD 146 may be applied up to and including the day of harvest.
	<b>Botrytis Blight</b> <i>Botrytis cinerea</i>		
Bananas Plantains	<b>Sigatoka</b> <i>Mycosphaerella</i> spp.	½ - 3 [alternate: 8 - 48 oz]	Begin application when leaves first appear and repeat on 7- to 21-day intervals or as needed. The addition of an approved emulsifiable oil to spray solutions will improve performance.

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
<b>Berry</b> Blueberries Blackberry Raspberry Loganberry Huckleberry Cranberry Gooseberry Elderberry Currant Caneberry Bushberry and other berry crops	<b>Mummy Berry</b> <i>Monilinia vaccinii-corymbosi</i>  <b>Anthracnose Fruit Rot</b> <i>Colletotrichum gloeosporioides</i> <i>Colletotrichum acutatum</i>  <b>Botrytis Blight</b> <i>Botrytis cinerea</i>  <b>Leaf Rust</b> <i>Pucciniastrum vaccinii</i>  <b>Powdery Mildew</b> <i>Microsphaera alni</i>  <b>Sooty Mold</b> Misc. fungi  <b>Alternaria Fruit Rot</b> <i>Alternaria tenuissima</i>  <b>Bacterial Canker[*]</b> <i>Pseudomonas spp.</i>  <b>Downy Mildew</b> <i>Peronospora sparsa</i>  <b>Phomopsis</b> <i>Phomopsis vaccinii</i>  [*Not For Use In California]	½ - 3 [alternate: 8 - 48 oz]	<p>Mummy Berry - For suppression, begin application at the bud break stage of development and repeat on a 7- to 10-day interval or as needed. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides for Mummy Berry control.</p> <p>Bacterial Canker - Apply before fall rains and again during dormancy before spring growth. Apply throughout the growing season prior to disease development and repeat on a 2- to 10-day interval or as needed.</p> <p>Alternaria Fruit Rot and Anthracnose - suppression- Begin application prior to disease development and repeat on a 2- to 10-day interval or as needed. For improved performance of QRD 146, add a surfactant to the spray tank to improve coverage.</p> <p>For all other diseases - Begin application prior to disease development and repeat on a 2- to 10-day interval or as needed. For improved performance of QRD 146, add a surfactant to the spray tank to improve coverage.</p> <p>Cranberries - Make application to non-flooded fields only.</p> <p>QRD 146 may be applied to fruit up to and including the day of harvest.</p>

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
<b>Brassica Vegetables (Cole Crops)</b>  Broccoli Cabbage Cauliflower Brussels Sprouts Collards Kale Mustard Greens Kohlrabi and other brassica crops	<b>Pin Rot Complex</b> <i>Alternaria/</i> <i>Xanthomonas</i> <b>Bacterial Leaf Spot</b> <i>Pseudomonas</i> <i>syringae</i> <b>Bacterial Soft Rot</b> <i>Erwinia/</i> <i>Pseudomonas</i> <b>Black Rot</b> <i>Xanthomonas</i> <i>campestris</i> <b>Xanthomonas Leaf Spot</b> <i>Xanthomonas</i> <i>campestris</i> <b>Alternaria Leaf Spot</b> <i>Alternaria</i> spp. <b>Anthracnose</b> <i>Colletotrichum</i> <i>higginsianum</i> <b>Cercospora Leaf Spot</b> <i>Cercospora</i> <i>brassicicola</i> <b>Downy Mildew</b> <i>Peronospora</i> <i>parasitica</i> <i>Peronospora</i> spp. <b>Powdery Mildew</b> <i>Erysiphe polygoni</i> <b>Southern Blight</b> <i>Sclerotium rolfsii</i>	½ - 3 [alternate: 8 - 48 oz]	<p>Pin Rot - For suppression, begin application when environmental conditions are conducive to disease development and repeat on 2- to 10-day intervals or as needed. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides for Pin Rot control.</p> <p>For all other diseases - Begin application soon after emergence or transplant and when conditions are conducive to disease development. Repeat on a 3- to 10-day interval or as needed.</p>

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
<b>Bulb Vegetables</b>  Onion Garlic Shallots and other bulb vegetables including those grown for seed production.	<b>Botrytis Neck Rot</b> <i>Botrytis</i> spp. <b>Botrytis Leaf Blight</b> <i>Botrytis squamosa</i> <b>Onion Purple Blotch</b> <i>Alternaria porri</i> <b>Onion Downy Mildew</b> <i>Peronospora destructor</i> <b>Downy Mildew</b> <i>Peronospora</i> spp. <b>Powdery Mildew</b> <i>Erysiphe</i> spp. <b>White Rot</b> <i>Sclerotium cepivorum</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application when environmental conditions are conducive to disease development and repeat on a 7- to 10-day interval or as needed.  Apply sufficient water to provide complete coverage of plants. When conditions are conducive to rapid disease development, use QRD 146 in a rotational program with other registered fungicides
	<b>Rust</b> <i>Puccinia porri</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	For suppression, begin application when conditions are conducive to disease development and repeat on a 7- to 10-day interval or as needed. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides for Rust control.

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
<b>Cereal Grains</b>  Barley Corn Millets Oat Rice Rye Sorghum Triticale Wheat and other cereal grain crops	<b>Powdery Mildew</b> <i>Erysiphe graminis</i> <b>Rust</b> <i>Puccinia</i> spp. <b>Blast</b> <i>Pyricularia oryzae</i> <b>Sheath Spot</b> <i>Rhizoctonia oryzae</i> <b>Sheath Blight</b> <i>Thanatephorus cucumeris</i> (Anamorph: <i>Rhizoctonia solani</i> ) <i>Thanatephorus kernel</i> <b>Smut</b> <i>Tilletia barclayana</i> <b>Bacterial Blight and Streak</b> <i>Xanthomonas</i> spp. <b>Stem Rot</b> <i>Sclerotium oryzae</i> <i>Magnaporthe</i> spp. <b>Brown Rot, Leaf Spots and Smuts</b> <i>Cercospora</i> spp. <i>Entyloma</i> spp. <i>Dreschlera</i> spp. <i>Cochliobolus</i> spp. <i>Ceratobasidium</i> spp.	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin applications when environmental conditions and plant stage are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure.

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
<p><b>Citrus[*]</b> Orange Grapefruit Lemon Tangerine Tangelo Pummelo and other citrus crops</p>	<p><b>Greasy Spot[*]</b> <i>Mycosphaerella citri</i></p> <p><b>Post Bloom Fruit Drop[*]</b> <i>Colletotrichum Acutatum</i></p> <p><b>Scab [*]</b> <i>Elsinoe fawcetti</i></p> <p><b>Melanose[*]</b> <i>Diaporthe citri</i></p> <p><b>Alternaria Leaf Spot[*]</b> <i>Alternaria alternate</i></p> <p><b>Bacterial Blast [*]</b> <i>Pseudomonas syringae</i></p> <p><b>[*Not For Use In California]</b></p>	<p>½ - 3 [alternate: 8 - 48 oz]</p>	<p><b>Greasy Spot</b> - For suppression, begin applications at first new foliar flush, and repeat with subsequent new flushes. When conditions are conducive to rapid disease development, QRD 146 may be used in a tank mix program with other registered products, such as spray oil or copper-based fungicides, at labeled rates.</p> <p><b>Post Bloom Fruit Drop</b> - For suppression, begin applications at early bloom and when conditions are conducive to disease development. Repeat on a 7- to 10-day interval or as needed. Utilize the shorter spray interval between applications if warm, wet conditions persist.</p> <p><b>Citrus Scab</b> - For suppression, begin applications at first new foliar flush and repeat at petal fall and at ½ inch diameter fruit.</p> <p><b>Melanose</b> - For suppression, begin applications at petal fall and repeat on a 14- to 21-day interval until fruit becomes resistant.</p> <p><b>Alternaria Leaf Spot</b> - Begin applications when environmental conditions and plant stage are conducive to disease development. Repeat on 7- to 10-day intervals or as needed.</p> <p><b>Bacterial Blast</b> - Begin applications when environmental conditions are conducive to disease development. Repeat on 3- to 10-day intervals or as needed.</p> <p>For improved performance on Post Bloom Fruit Drop, Scab and Melanose, use QRD 146 in a tank mix or rotational program with other registered fungicides.</p>
<p><b>Coffee</b></p>	<p><b>Coffee Berry Disease</b> <i>Colletotrichum coffeanum</i></p> <p><b>Bacterial Blight</b> <i>Pseudomonas syringae</i></p>	<p>½ - 3 [alternate: 8 - 48 oz]</p>	<p>Begin applications when environmental conditions are conducive to disease development. Continue applications on 7- to 10-day intervals or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure.</p> <p>For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides.</p>

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
<b>Corn</b> Sweet Corn Popcorn Seed Corn Silage Corn Field Corn and other corn crops	<b>Common Rust</b> <i>Puccinia sorghi</i> <b>Northern Leaf Blight</b> <i>Exserohilum turcicum</i> <i>Helminthosporium turcicum</i> <b>Southern Leaf Blight</b> <i>Bipolaris maydis</i> <i>Helminthosporium maydi</i> <i>Cochliobolus heterostrophus</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin applications when environmental conditions are conducive to disease development. Continue applications on 7- to 10-day intervals or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure.
<b>Clover, forage</b> <b>Alfalfa, forage</b>  Other animal feed nongrass crops including those grown for seed production	<b>White Mold            (Sclerotinia Stem Rot)</b> <i>Sclerotinia sclerotiorum</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	For suppression of White Mold, begin application soon after emergence or transplant and when conditions are conducive to disease development. Repeat on a 7- to 10-day interval or as needed.
<b>Cucurbits</b>  Cucumber Cantaloupe Melon Muskmelon Squash Watermelon and other cucurbit crops	<b>Powdery Mildew</b> <i>Erysiphe</i> spp. <i>Sphaerotheca</i> spp. <b>Gummy Stem Blight</b> <i>Didymella bryoniae</i> <i>Phoma cucurbitacearum</i> <b>Angular Leaf Spot</b> <i>Pseudomonas syringae</i> <b>Anthracnose</b> <i>Colletotrichum lagenarium</i> <b>Downy Mildew</b> <i>Pseudoperonospora cubensis</i> <b>Bacterial Fruit Blotch</b> <i>Acidovorax avenae</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence or transplant and when conditions are conducive to disease development. Repeat on 7- to 10-day interval or as needed. When environmental conditions and plant stage are conducive to rapid disease development, use QRD 146 in a rotational program with other registered fungicides.

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
<b>Fruiting Vegetables</b>  Pepper Tomato Eggplant Ground Cherry Tomatillo Okra and other fruiting vegetables	<b>Bacterial Spot[*]</b> <i>Xanthomonas</i> spp.  <b>Target Spot[*]</b> <i>Corynespora</i> <i>Cassicola</i>  <b>[*Not For Use In California]</b>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence or transplant and when environmental conditions are conducive to disease development. Continue applications on a 2- to 7-day interval or as needed. When conditions are conducive to rapid disease development, for improved control, use QRD 146 in a tank mix program with copper-based bactericides registered for control of Bacterial Spot at labeled rates.
	<b>Bacterial Speck[*]</b> <i>Pseudomonas syringae</i> pv. <i>Tomato</i>  <b>[*Not For Use In California]</b>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence or transplant and when environmental conditions are conducive to disease development. Continue applications on a 2- to 7-day interval or as needed. Use the stated higher rates when conditions are conducive to rapid disease development.
	<b>Early Blight</b> <i>Alternaria solani</i>  <b>Late Blight</b> <i>Phytophthora infestans</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	For suppression, begin application when plants are 4 to 6 inches high. Repeat applications on a 5- to 7-day interval or as needed. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides. Use the stated shorter spray intervals under conditions conducive to rapid disease development.
	<b>Powdery Mildew</b> <i>Leveillula taurica</i> <i>Oidiopsis taurica</i> <i>Erysiphe</i> spp. <i>Sphaerotheca</i> spp. <b>Downy Mildew</b> <i>Pseudoperonospora cubensis</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	For suppression, begin application soon after emergence or transplant and continue on a 7- to 10-day interval or as needed. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides.
	<b>Buck-eye Rot</b> <i>Phytophthora parasitica</i> <b>Anthracnose</b> <i>Colletotrichum candidum</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence or transplant and continue on a 7- to 10-day interval or as needed. For improved performance of QRD 146, add a surfactant to the spray tank to improve coverage.
	<b>Bacterial Canker</b> <i>Clavibacter michiganensis</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin applications when environmental conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed.
	<b>Gray Mold</b> <i>Botrytis cinerea</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence or transplant and repeat on a 7- to 10-day interval or as needed.

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
Grape	<b>Gray Mold</b> <i>Botrytis cinerea</i> <b>Sour Rot</b> [a complex of pathogens <i>Aspergillus niger</i> , <i>Alternaria tenuis</i> , <i>Botrytis cinerea</i> , <i>Cladosporium herbarum</i> , <i>Rhizopus arrhizus</i> , <i>Penicillium spp.</i> , and others]	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application at bloom, before bunch closure, at veraison and preharvest. Apply in sufficient water to provide full coverage.  QRD 146 may be applied to fruit up to and including the day of harvest.
	<b>Powdery Mildew</b> <i>Uncinula necator</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application when new shoots are $\frac{1}{2}$ to $1\frac{1}{2}$ inches long. Repeat when shoots are 3 to 5 inches long, when shoots are 8 to 10 inches long and then at 7- to 10-day intervals until disease conditions no longer exist. Use the stated higher rate and shorter interval when conditions are conducive to rapid disease development. Apply in sufficient water to provide thorough coverage.
	<b>Downy Mildew</b> <i>Plasmopara viticola</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	For suppression, apply at 10-inch shoot, then at 7- to 10-day intervals until bunch closure (berry touch). For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides for Downy Mildew control.
	<b>Phomopsis</b> <i>Phomopsis viticola</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin applications when shoots are $\frac{1}{2}$ to 1 inch long and repeat when shoots are 6-8 inches long.
	<b>Black Rot</b> <i>Guignardia bidwelli</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin applications when shoots are 4 to 6 inches in length and repeat on 7- to 10-day intervals throughout the season until the berries start to change color.
	<b>Eutypa</b> <i>Eutypa lata</i>	1 - 5% w/v*	Apply solution to pruning wounds. Sanitation is critical. All wood from infected plants must be removed from the vineyard and destroyed (either buried or burned).
*1-5% w/v rate (QRD 146 to water) for this use only.			

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
Herbs/ Spices	<b>Bacterial Blight</b> Pseudomonas syringae <b>Anthracnose</b> Colletotrichum spp. <b>Alternaria Leaf Blight</b> Alternaria spp. <b>Botrytis</b> Botrytis spp.	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application when environmental conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed.
Hop	<b>Powdery Mildew</b> Sphaerotheca macularis  <b>Downy Mildew</b> Peronospora spp.	1 - 4 lbs./100 gal [alternate 16 - 64 oz/100 gal]	<p>Use the stated higher rates when moderate to high disease pressure is present or expected. Begin applications when environmental conditions are conducive to rapid disease development. Continue sprays at 7-day intervals or as needed. Apply at a rate of 2-4 lbs. [alternate 32 - 64 oz] of QRD 146 per 100 gallons of water using ground equipment.</p> <p>Spray volume ranges for hop growth stages are as follows:</p> <p>Emergence to training: Use 2-4 lbs. [alternate 32 - 64 oz] of product per 100 gallons of water. Apply using a minimum spray volume of 20 gallons per acre. Coverage will vary with the size of the vines and the type of spray equipment. Apply adequate spray volume to achieve complete spray coverage. Maximum spray volume is 400 gallons per acre.</p> <p>Training to wire: Use 2-4 lbs. [alternate 32 - 64 oz] of product per 100 gallons of water. Apply using a minimum spray volume of 50 gallons per acre. Coverage will vary with the size of the vines and the type of spray equipment. Apply adequate spray volume to achieve complete spray coverage. Maximum spray volume is 400 gallons per acre.</p> <p>Wire touch through harvest: Use 2-4 lbs. [alternate 32 - 64 oz] of product per acre. Apply in a minimum spray volume of 100 gallons per acre. Consider higher water volumes to achieve thorough coverage after side arms develop. Apply adequate spray volume to achieve complete spray coverage. Maximum spray volume is 400 gallons per acre. Use the stated higher rates when moderate to high disease pressure is present or expected.</p>

Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
<p><b>Leafy Vegetables</b></p> <p>Lettuce Celery Spinach Parsley Radicchio and other leafy vegetable crops including those grown for seed production</p>	<p><b>Downy Mildew</b> <i>Bremia lactucae</i> <i>Peronospora</i> spp.</p> <p><b>Powdery Mildew</b> <i>Erysiphe cichoracearum</i></p> <p><b>White Rust</b> <i>Albugo occidentalis</i></p> <p><b>Pink Rot</b> <i>Sclerotinia sclerotiorum</i></p> <p><b>Anthracnose</b> <i>Colletotrichum</i> spp.</p> <p><b>Bacterial Leaf Spot</b> <i>Xanthomonas campestris</i> pv. <i>vitians</i></p> <p><b>Bacterial Blight</b> <i>Xanthomonas campestris</i></p>	<p>½ - 3 [alternate: 8 - 48 oz]</p>	<p>Pink Rot – Begin application approximately 8 weeks before harvest and repeat on a 14-day interval. Apply QRD 146 as a directed spray in sufficient water to ensure thorough coverage of the base of the plants and the surrounding soil surface. Light irrigation following application to incorporate QRD 146 may improve disease control.</p> <hr/> <p>Downy Mildew / Powdery Mildew / White Rust- For suppression, begin application when conditions are conducive to disease development and repeat on 2- to 10-day intervals or as needed. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides for Downy Mildew and Powdery Mildew control.</p> <hr/> <p>Anthracnose – suppression- Begin application prior to disease development when environmental conditions and plant stage are conducive to rapid disease development and repeat on a 7- to 10-day interval or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure.</p> <hr/> <p>Bacterial Blight / Bacterial Leaf Spot- Begin applications when environmental conditions are conducive to disease development. Repeat on 2- to 10-day intervals or as needed.</p>

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
<p><b>Continued Leafy Vegetables</b></p> <p>Lettuce Celery Spinach Parsley Radicchio and other leafy vegetable crops including those grown for seed production.</p>	<p><b>Sclerotinia Head and Leaf Drop</b> <i>Sclerotinia</i> spp.</p>	<p>½ - 3 [alternate: 8 - 48 oz]</p>	<p><u>For control of early Sclerotinia Head and Leaf Drop:</u> Apply at planting or immediately following planting but prior to crop emergence as a 4 to 6 inch seed line treatment. Make a second application as a directed spray with multiple nozzles per each seed line in sufficient water to ensure thorough coverage of lower plant leaves and surrounding soil surface within 7 days of thinning. Repeat applications on 10- to 14-day intervals if conditions for disease development persist. Use the stated higher rates under conditions conducive to moderate to severe disease pressure. Light irrigation after application to incorporate the product may improve disease control.</p> <p style="text-align: center;">OR</p> <p><u>For control of Sclerotinia Head and Leaf Drop:</u> Apply as a directed spray with multiple nozzles per each seed line in sufficient water to ensure thorough coverage of lower plant leaves and surrounding soil surface within 7 days of thinning or transplanting. Repeat applications on 10- to 14-day intervals if conditions for disease development persist. Use the stated higher rates under conditions conducive to moderate to severe disease pressure. Light irrigation after application to incorporate the product may improve disease control.</p>

Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
<b>Legumes/ Vegetables (succulent and dried beans and peas)</b>  Beans Green beans Snap beans Shell beans Soybeans Dry Beans Garbanzo beans Lima beans Peas Chick peas Split peas Lentils and other legume/ vegetable crops including those grown for seed production	<b>Rust</b> <i>Uromyces appendiculatus</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	For suppression, begin application soon after emergence or transplant and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides for Rust control.
	<b>Rust</b> <i>Puccinia</i> spp. <b>Bacterial Pustule</b> <i>Xanthomonas</i> spp.	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin applications when environmental conditions and plant stage are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure.
	<b>Powdery Mildew</b> <i>Erysiphe</i> spp. <b>Downy Mildew</b> <i>Peronospora manshurica</i>		
	<b>Asian Soybean Rust</b> <i>Phakopsora pachyrhizi</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Use as part of a program with other fungicides labeled for Asian Soybean Rust. Begin applications when environmental conditions are conducive to disease development. Continue at 7- to 14-day intervals or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure.
	<b>Damping-Off</b> <i>Aphanomyces</i> spp.	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence or transplant and when conditions are conducive to disease development. Repeat on a 7- to 10-day interval or as needed.
	<b>White Mold (Sclerotinia Stem Rot)</b> <i>Sclerotinia sclerotiorum</i>  <b>Gray Mold (Botrytis Blight)</b> <i>Botrytis</i> spp.	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence or transplant and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. When conditions are conducive to rapid disease development, use QRD 146 in a rotational program with other registered fungicides.
<b>Mint and other herb/spices</b>	<b>Rust</b> <i>Puccinia menthae</i> <b>Powdery Mildew</b> <i>Erysiphe</i> spp. <b>Downy Mildew</b> <i>Peronospora</i> spp.	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure.

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
<b>Oil Seed Crops</b> Canola Castor Coconut Cotton Flax Oil Palm Olive Peanut Rapeseed Safflower Sesame Sunflower Soybeans and other oilseed crops including those grown for seed production	<b>Bacterial Speck</b> <i>Pseudomonas syringae</i> <i>pv. glycinea</i> <b>Brown Spot</b> <i>Septoria glycines</i> <b>Pod and Stem Blight</b> <i>Diaporthe phaseolorum</i> <i>var. sojae</i> <i>Phomopsis longicola</i> <b>Downy Mildew</b> <i>Peronospora manshurica</i> <b>Rust</b> <i>Albugo</i> spp. <i>Puccinia</i> spp. <b>White Mold</b> <b>(Sclerotinia Stem Rot)</b> <i>Sclerotinia sclerotiorum</i> <b>Bacterial Pustule</b> <i>Xanthomonas</i> spp.	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure.  For suppression of White Mold, begin application soon after emergence and when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure.
	<b>Asian Soybean Rust</b> <i>Phakopsora pachyrhizi</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Use as part of a program with other fungicides labeled for Asian Soybean Rust. Begin applications when environmental conditions are conducive to disease development. Continue at 7- to 14-day intervals or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure.

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
Olive	<b>Olive Knot</b> <i>Pseudomonas Savastanoi</i>  <b>Leaf Spot</b> <i>Cercospora cladosporioides</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Apply before fall rains and again during dormancy before spring growth. Under conditions conducive to heavy disease pressure, for improved control, use QRD 146 in a tank-mix or rotational program with a copper-based bactericide registered for control of Olive Knot. In cool, wet areas, apply preventive treatments to olive trees after harvest but before winter rains begin and again in spring if wet, rainy weather persists.
Peanut[*]	<b>Early Leaf Spot [*]</b> <i>Cercospora</i> spp. <i>Cercospora arachidicola</i>  <b>Late Leaf Spot [*]</b> <i>Cercosporidium Personatum</i>  <b>Rust [*]</b> <i>Puccinia arachidis</i>  <b>White Mold[*]</b> <i>Sclerotinia sclerotiorum</i>  <b>Web Blotch [*]</b> <i>Phoma arachidicola</i>  [*Not For Use In California]	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application when environmental conditions are conducive to disease development. Repeat applications on 14-day intervals or as needed.  For improved control of Leaf Spot diseases, use QRD 146 in a tank mix program with copper-based fungicides registered for control of Peanut Leaf Spot. Peanut hay may be fed to livestock.

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
<p><b>Pome Fruit</b></p> <p>Apple Crabapple Pear Quince Mayhaw and other pome fruit</p>	<p><b>Fire Blight</b> <i>Erwinia amylovora</i></p>	<p>½ - 3 [alternate: 8 - 48 oz]</p>	<p>For disease suppression, begin application at 1 – 5% bloom and repeat or as needed to protect open, untreated blossoms when conditions favoring disease development are likely to occur. For maximum effectiveness, use QRD 146 prior to and as close as possible to Fire Blight infection events. During periods of rapid bloom development and frequent infection periods, use 2- to 7-day spray intervals. After petal fall, continue applications on a 7-day interval while environmental conditions favor disease development.</p> <hr/> <p>Apply in sufficient water to provide full coverage. For improved performance, QRD 146 may be used in a rotational program with antibiotics registered for Fire Blight control such as but not limited to oxytetracycline or streptomycin.</p> <hr/> <p>Proper orchard cultural practices are essential to eliminate Fire Blight-infected tissue from the orchard to assure good performance of any crop protection product. Care must be taken to remove and destroy dead and diseased wood from the orchard prior to and during the growing season.</p> <hr/> <p>Use of QRD 146 alone has not been shown to affect fruit finish. Use caution when selecting spray adjuvants. Select only those adjuvants which through prior experience do not affect fruit finish when combined with QRD 146.</p>

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
Continued Pome Fruit  Apple Crabapple Pear Quince Mayhaw and other pome fruit	<b>Scab</b> <i>Venturia</i> spp.	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	For suppression, begin application at green tip or when environmental conditions become favorable for primary Scab development and repeat on a 7- to 10-day interval or as needed. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides for Scab control.
	<b>Brooks Spot [*]</b> <i>Mycosphaerella pomii</i> <b>Cedar Apple Rust[*]</b> <i>Gymnosporangium juniperi-virginianae</i> <b>Flyspeck[*]</b> <i>Schizothyrium pomii</i> <b>Sooty Blotch [*]</b> <i>Gloeodes pomigena</i> <b>Bot Rot [*]</b> <i>Botryosphaeria dothidea</i> <b>Bitter Rot [*]</b> <i>Colletotrichum</i> spp. <b>Bull's Eye Rot [*]</b> <i>Neofabraea</i> spp.  <b>[*Not For Use In California]</b>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	For control of Brooks Spot, Cedar Apple Rust, Flyspeck, Sooty Blotch, Bot Rot, Bitter Rot and Bull's Eye Rot: Begin applications pre-bloom when environmental conditions are conducive to disease development. Repeat applications at 7- to 14-day intervals or as needed. Apply in sufficient spray volume to ensure thorough coverage. Use the stated higher application rates and shorter spray intervals when conditions are conducive to rapid disease development or heavy disease pressure. For improved performance of QRD 146, add a surfactant, known to be safe to the target crop, to the spray tank to improve coverage and wetting of plant surfaces. QRD 146 may be applied up to and including the day of harvest (0-day PHI).
	<b>Powdery Mildew[*]</b> <i>Podosphaera Leucotricha</i>  <b>[*Not For Use In California]</b>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application at tight cluster, or sooner, if conditions are conducive to disease development. Repeat applications through the second cover spray on a 7- to 10-day interval. Additional sprays beyond second cover may be needed on susceptible varieties or when environmental conditions are conducive to rapid disease development. Use the stated high label rate and shorter spray interval when conditions are conducive to rapid disease development.

Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
<b>Root / Tuber and Corm Vegetables</b>  Carrot Potato Sweet Potato Beets Ginger Horseradish Radish Ginseng Turnip and other root/ tuber and corm crops including those grown for seed production	<b>Black Rot/ Black Crown Rot</b> <i>Alternaria</i> spp. <b>Alternaria Leaf Blight</b> <i>Alternaria dauci</i> <b>Bacterial Leaf Spot [*]</b> <i>Xanthomonas</i> <i>campestris</i> pv. <i>Carotae</i>  <b>[*Not For Use In California]</b>	½ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence or transplant and when conditions are conducive to disease development. Repeat on a 7- to 10-day interval or as needed. Use the stated high rate and shorter interval when conditions are conducive to rapid disease development. Apply in sufficient water to provide thorough coverage.
	<b>Bacterial Leaf Blight</b> <i>Xanthomonas</i> <i>campestris</i> <b>Downy Mildew</b> <i>Peronospora</i> spp. <b>Powdery Mildew</b> <i>Erysiphe</i> spp. <b>White Mold</b> <i>Sclerotinia</i> <i>sclerotiorum</i> <b>Gray Mold</b> <i>Botrytis</i> spp.	½ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence or transplant and when conditions are conducive to disease development. Repeat on a 7- to 10-day interval or as needed.  For suppression of White Mold, begin application soon after emergence or transplant and when conditions are conducive to disease development. Repeat on a 7- to 10-day interval or as needed.
	<b>Aerial Stem Rot [*]</b> <i>Erwinia carotovora</i>  <b>[*Not For Use In California]</b>	½ - 3 [alternate: 8 - 48 oz]	For suppression, begin applications at the first sign of disease, or when conditions become conducive for disease development. Repeat or as needed on a 7- to 10-day interval.
	<b>Early Blight</b> <i>Alternaria solani</i>  <b>Late Blight</b> <i>Phytophthora</i> <i>infestans</i>	½ - 3 [alternate: 8 - 48 oz]	For suppression, begin application soon after emergence and when conditions are conducive to disease development. Repeat on a 5- to 7-day interval or as needed. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides for Early and Late Blight control.
	<b>Roses, Field</b>	<b>Powdery Mildew</b> <i>Sphaerotheca</i> spp.  <b>Rust</b> <i>Puccinia</i> spp.	½ - 3 [alternate: 8 - 48 oz]

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
<p><b>Stone Fruit</b></p> <p>Apricot Cherry Nectarine Peach Plum Prune and other stone fruit crops</p>	<p><b>Anthracnose</b> <i>Colletotrichum</i> spp.</p> <p><b>Fruit Brown Rot</b> <i>Monilinia fruticola</i></p> <p><b>Brown Rot Blossom Blight</b> <i>Monilinia laxa</i></p> <p><b>Scab</b> <i>Cladosporium</i> <i>Carpophilum</i></p> <p><b>Bacterial Canker</b> [*] <i>Pseudomonas</i> spp.</p> <p><b>Powdery Mildew</b> [*] <i>Sphaerotheca</i> <i>pannosa</i> <i>Podospaera</i> <i>clandestine</i> <i>Podospaera</i> spp.</p> <p><b>Rusty Spot</b> <i>Podospaera</i> <i>leucotricha</i></p> <p><b>Alternaria Spot / Fruit Rot</b> <i>Alternaria alternata</i></p> <p><b>Gray Mold</b> <i>Botrytis cinerea</i></p> <p><b>Shot Hole</b> <i>Wilsonomyces carpophilus</i></p> <p><i>Xanthomonas pruni</i> <i>Blumeriella jaapii</i> <i>Cercospora</i> spp.</p> <p><b>[*Not For Use In California]</b></p>	<p>½ - 3 [alternate: 8 - 48 oz]</p>	<p>Anthracnose and Fruit Brown Rot - suppression - Begin application prior to disease development when environmental conditions and plant stage are conducive to rapid disease development and repeat on a 7- to 10-day interval or as needed.</p> <p>Brown Rot Blossom Blight – Begin application at early bloom and repeat through petal fall on a 7-day interval or as needed.</p> <p>Scab – Begin application at petal fall and repeat on a 7- to 10-day interval or as needed.</p> <p>Bacterial Canker – Apply post harvest before fall rains and again during dormancy before spring growth.</p> <p>Powdery Mildew - For suppression, begin application at popcorn stage and repeat on a 7-day interval or as needed</p> <p>table continues on next page</p>

<p>continued Stone Fruit</p>	<p><b>Bacterial Leaf Spot/ Bacterial Spot [*]</b> <i>Xanthomonas Arboricola</i></p> <p><b>[*Not For Use In California]</b></p>	<p>½ - 3 [alternate: 8 - 48 oz]</p>	<p>Bacterial Leaf Spot / Bacterial Spot - Begin applications at bud break and continue on a 7- to 14-day schedule or as needed until harvest. During periods of rapid disease development and frequent infection periods, QRD 146 may be used in a program with other registered antibiotics and/or copper bactericides. For the improved performance of QRD 146, add a surfactant to the spray tank to improve coverage.</p> <p>For all diseases: Use the stated higher rates and shorter application intervals under heavy disease pressure. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides.</p> <p>Post harvest disease protection – To aid in the control of post harvest infections of Botrytis and Monilinia, apply QRD 146 prior to harvest with sufficient water, to thoroughly cover fruit. Apply on a 7-day schedule or as needed up until the time of harvest.</p> <p>QRD 146 may be applied to fruit up to and including the day of harvest.</p>
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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
Strawberry	<p><b>Botrytis</b> <i>Botrytis cinerea</i></p> <p><b>Gray Mold</b> <i>Botrytis</i> spp.</p> <p><b>Powdery Mildew</b> [*] <i>Sphaerotheca macularis</i> <i>Erysiphe</i> spp.</p> <p><b>Anthracnose</b> [*] <i>Colletotrichum acutatum</i></p> <p><b>Angular Leaf Spot</b> <i>Xanthomonas fragariae</i></p> <p><b>[*Not For Use In California]</b></p>	<p>½ - 3 [alternate: 8 - 48 oz]</p>	<p>Botrytis / Powdery Mildew - For suppression, begin application at or before flowering and repeat on 7- to 10-day intervals or as needed through harvest. Use the stated higher rates and shorter application intervals under heavy disease pressure. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides for Powdery Mildew and Botrytis control.</p> <p>Anthracnose -- Begin application prior to disease development and repeat on 7- to 10-day intervals or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides. Thorough coverage is essential.</p> <p>Angular Leaf Spot - Begin applications when environmental conditions are conducive to disease development. Continue applications on 3- to 10-day intervals or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides. Thorough coverage is essential.</p> <p>QRD 146 may be applied up to and including the day of harvest.</p>

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
Sugar Beets	<b>Powdery Mildew</b> <i>Erysiphe betae</i> <i>Erysiphe polygoni</i> <b>Leaf Spot</b> <i>Cercospora beticola</i> <b>Ramularia</b> <i>Ramularia</i> spp. <b>Rust</b> <i>Uromyces betae</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin applications when environmental conditions are conducive to disease development. Continue applications on 7- to 10-day intervals or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure.
Tobacco	<b>Blue Mold</b> <i>Peronospora</i> <i>hyoscyami</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin applications when conditions are conducive to disease development. Continue applications on 7- to 10-day intervals or as needed.
<b>Tree Nuts</b> Almond Pistachio Pecan Walnut Filberts Chestnut Cashew Beechnut Butternut Macadamia and other tree nut crops	<b>Walnut Blight</b> <i>Xanthomonas</i> <i>campestris</i>  <b>Alternaria Leaf Spot</b> <i>Alternaria alternata</i>  <b>Anthracnose</b> <i>Colletotrichum</i> <i>acutatum</i>  <b>Bacterial Canker</b> <i>Pseudomonas</i> <i>syringae</i>  <b>Scab</b> <i>Cladosporium</i> <i>carpophilum</i>  <b>Botryosphaeria Blight</b> <i>Botryosphaeria dothidea</i>  <b>Shot Hole</b> <i>Wilsonomyces</i> <i>carpophilus</i>  <i>Xanthomonas pruni</i>  <i>Blumeriella jaapi</i>  <i>Cercospora</i> spp.  <b>Brown Rot</b> <i>Monilinia</i> spp.  <b>Pecan Scab</b> <i>Cladosporium</i> <i>caryigenum</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Walnut Blight – Begin application no later than pistillate bloom and repeat on 3- to 10- day intervals or as needed. Apply in advance of rain for maximum protection. Under conditions conducive to heavy disease pressure, for improved control, use QRD 146 in a tank-mix or rotational program with a copper-based bactericide registered for control of Walnut Blight.  Anthracnose, Shot Hole and Brown Rot - suppression - Begin application prior to disease development and repeat on 7- to 10-day intervals or as needed.  For all other diseases – Begin application prior to disease development and repeat on 7- to 10-day intervals or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides.

Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
<p><b>Tropical Fruits</b></p> <p>Avocado Mango Papaya Bananas Plantains Pineapple</p>	<p><b>Anthracnose</b> <i>Colletotrichum gloeosporioides</i> <i>Colletotrichum ananas</i></p> <p><b>Bacterial Canker</b> <i>Xanthomonas campestris</i></p> <p><b>Scab</b> <i>Sphaceloma perseae</i></p>	<p>½ - 3 [alternate: 8 - 48 oz]</p>	<p>Avocado/Mango - Begin application at budbreak and repeat on a 14- to 21-day interval or as needed through harvest.</p> <p>Papaya/Pineapple - Begin application at flowering and repeat on a 14- to 21-day interval or as needed through harvest.</p> <p>Bacterial Canker – Begin applications when environmental conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed.</p> <p>QRD 146 may be applied to fruit up to and including the day of harvest.</p>
	<p><b>Sigatoka</b> <i>Mycosphaerella fijiensis.</i></p>	<p>½ - 3 [alternate: 8 - 48 oz]</p>	<p>Begin application when leaves first appear and repeat on a 7- to 21-day interval or as needed. Apply in sufficient water to obtain thorough coverage of foliage. For improved disease control, QRD 146 may be tank-mixed with oil or other fungicides registered for control of Sigatoka at labeled rates. When conditions are conducive to rapid disease development and/or heavy disease pressure, use the stated higher application rates and rotational spray programs with other fungicides registered for control of Sigatoka.</p>
<p><b>Kiwi</b></p>	<p><b>Botrytis Fruit Rot</b> <i>Botrytis cinerea</i></p> <p><b>Bacterial Blight</b> <i>Pseudomonas viridiflava</i> and <i>Pseudomonas syringae</i></p> <p><b>Sclerotinia</b> <i>Sclerotinia sclerotiorum.</i></p>	<p>½ - 3 [alternate: 8 - 48 oz]</p>	<p>Begin application at early bloom and repeat on 7- to 10-day intervals or as needed. QRD 146 may be applied to fruit up to and including the day of harvest.</p>

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Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
Watercress	Cercospora Leaf Spot <i>Cercospora</i> spp.	½ - 3 [alternate: 8 - 48 oz]	Begin applications when conditions are conducive to disease development. Continue applications on 7- to 10-day intervals or as needed.
Seed Production Crops  blue grass rye grass fescue orchard grass and other crops grown for seed production	Powdery Mildew <i>Erysiphe</i> spp. Rust <i>Puccinia</i> spp.	½ - 3 [alternate: 8 - 48 oz]	Begin applications when environmental conditions and plant stage are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure.

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Application Rates of QRD 146 for Selected Greenhouse Crops			
Greenhouse Crops	Disease	Rate Lbs. [alternate: oz]/100 gallons spray mix	Application Instructions
<b>Brassica</b> Broccoli Cabbage Cauliflower Brussels Sprouts Collards Kale Mustard Greens Kohlrabi and other brassica crops	<b>Pin Rot Complex</b> <i>Alternaria/Xanthomonas</i> <b>Bacterial Leaf Spot</b> <i>Pseudomonas syringae</i> <b>Bacterial Soft Rot</b> <i>Erwinia /</i> <i>Pseudomonas</i> <b>Black Rot</b> <i>Xanthomonas</i> <i>campestris</i> <b>Xanthomonas Leaf Spot</b> <i>Xanthomonas</i> <i>campestris</i> <b>Alternaria Leaf Spot</b> <i>Alternaria</i> spp. <b>Anthrachnose</b> <i>Colletotrichum</i> <i>higginsianum</i> <b>Cercospora Leaf Spot</b> <i>Cercospora</i> <i>brassicicola</i> <b>Downy Mildew</b> <i>Peronospora</i> <i>parasitica</i> <i>Peronospora</i> spp. <b>Powdery Mildew</b> <i>Erysiphe polygoni</i> <b>Southern Blight</b> <i>Sclerotium rolfsii</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	<p>Pin Rot – For suppression, begin application when environmental conditions in the greenhouse are conducive to disease development and repeat on a 3- to 10-day interval or as needed. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides for Pin Rot control.</p> <p>For all other diseases – Begin application soon after emergence or transplant and when conditions in the greenhouse are conducive to disease development. Repeat on a 7- to 10-day interval or as needed.</p>
<b>Bulb Vegetables</b> Onion Garlic Shallots and other bulb vegetables  <b>Bulb Vegetables</b> continued	<b>Botrytis Neck Rot</b> <i>Botrytis</i> spp. <b>Botrytis Leaf Blight</b> <i>Botrytis squamosa</i> <b>Onion Purple Blotch</b> <i>Alternaria porri</i> <b>Onion Downy Mildew</b> <i>Peronospora</i> <i>destructor</i> <b>Downy Mildew</b> <i>Peronospora</i> spp. <b>Powdery Mildew</b> <i>Erysiphe</i> spp. <b>White Rot</b> <i>Sclerotium cepivorum</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	<p>Begin application when environmental conditions in the greenhouse are conducive to disease development and repeat on a 7- to 10-day interval or as needed. When conditions in the greenhouse are conducive to rapid disease development, use QRD 146 in a rotational program with other registered fungicides. Thorough coverage is essential.</p>
	<b>Rust</b> <i>Puccinia porri</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	<p>For suppression, begin application when conditions are conducive to disease development and repeat on a 7- to 10-day interval or as needed. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides for Rust control.</p>
<b>Cucurbits</b> Cucumber Cantaloupe	<b>Powdery Mildew</b> <i>Erysiphe</i> spp. <i>Sphaerotheca</i> spp. <b>Gummy Stem Blight</b>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	<p>Begin application soon after emergence or transplant and when environmental conditions in the greenhouse are conducive to disease development.</p>

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<p>Melon Muskmelon Squash Watermelon and other cucurbits</p>	<p><i>Phoma cucurbitacearum</i> <i>Didymella bryoniae</i> <b>Angular Leaf Spot</b> <i>Pseudomonas</i> <i>  syringae</i> <b>Anthracnose</b> <i>Colletotrichum</i> <i>  lagenarium</i> <b>Downy Mildew</b> <i>Pseudoperonospora</i> <i>  cubensis</i> <b>Bacterial Fruit Blotch</b> <i>Acidovorax avenae</i></p>		<p>Repeat on 7- to 10-day interval or as needed. Thorough coverage is essential. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides.</p>
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Greenhouse Crops	Disease	Rate Lbs. [alternate: oz]/100 gallons spray mix	Application Instructions
<b>Fruiting Vegetables</b>  Pepper Tomato Eggplant and other fruiting vegetables	<b>Gray Mold</b> <i>Botrytis cinerea</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	For suppression, begin applications soon after emergence or transplant and continue on a 7- to 10-day interval or as needed. When environmental conditions in the greenhouse are conducive to rapid disease development, use QRD 146 in a rotational program with other registered fungicides. Thorough coverage is essential.
	<b>Powdery mildew</b> <i>Leveillula taurica</i> <i>Oidiopsis taurica</i> <i>Erysiphe</i> spp. <i>Sphaerotheca</i> spp.  <b>Downy Mildew</b> <i>Pseudoperonospora cubensis</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	For suppression, begin applications soon after emergence or transplant and continue on a 7- to 10-day interval or as needed. Thorough coverage is essential. Use maximum label rates under conditions conducive to rapid disease development. For improved performance, use QRD 146 in a tank mix or in a rotational program with other registered fungicides.
	<b>Bacterial Speck</b> <i>Pseudomonas syringae</i> pv. tomato	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence or transplant and when environmental conditions are conducive to disease development. Continue applications on a 2- to 7-day interval or as needed. Use the stated higher rates when conditions are conducive to rapid disease development. For improved performance, use QRD 146 in a tank mix or in a rotational program with other registered fungicides.
	<b>Bacterial Spot</b> <i>Xanthomonas</i> spp.  <b>Target Spot</b> <i>Corynespora cassicola</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence or transplant and when environmental conditions are conducive to disease development. Continue applications on a 2- to 7-day interval or as needed. When conditions are conducive to rapid disease development, for improved control, use QRD 146 in a tank mix program with copper-based bactericides registered for control of Bacterial Spot at labeled rates.

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Greenhouse Crops	Disease	Rate Lbs. [alternate: oz]/100 gallons spray mix	Application Instructions
Fruiting Vegetables continued	<b>Buck-eye Rot</b> <i>Phytophthora parasitica</i> <b>Anthracnose</b> <i>Colletotrichum candidum</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence or transplant and continue on a 7- to 10-day interval or as needed. For improved performance of QRD 146, add a surfactant to the spray tank to improve coverage.
	<b>Bacterial Canker</b> <i>Clavibacter michiganensis</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin applications when environmental conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed.
	<b>Early Blight</b> <i>Alternaria solani</i> <b>Late Blight</b> <i>Phytophthora infestans</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	For suppression, begin application when plants are 4 to 6 inches high. Repeat applications on a 5- to 7-day interval or as needed. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides for Early and Late Blight control. Use the stated shorter spray intervals under conditions conducive to rapid disease development.
Herbs/ Spices	<b>Bacterial Blight</b> <i>Pseudomonas syringae</i> <b>Anthracnose</b> <i>Colletotrichum</i> spp. <b>Alternaria Leaf Blight</b> <i>Alternaria</i> spp. <b>Botrytis</b> <i>Botrytis</i> spp.	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application when environmental conditions in the greenhouse are conducive to disease development. Repeat on a 7- to 10-day interval or as needed.

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Greenhouse Crops	Disease	Rate Lbs. [alternate: oz]/100 gallons spray mix	Application Instructions
<b>Leafy Vegetables</b>  Lettuce Celery Spinach Parsley Radicchio and other leafy vegetables	<b>Pink Rot</b> <i>Sclerotinia sclerotiorum</i>  <b>Downy Mildew</b> <i>Bremia lactucae</i> <i>Peronospora</i> spp. <b>Powdery Mildew</b> <i>Erysiphe cichoracearum</i> <i>Erysiphe</i> spp. <b>White Rust</b> <i>Albugo occidentalis</i>  <b>Anthracnose</b> <i>Colletotrichum</i> spp.  <b>Bacterial Blight</b> <i>Xanthomonas campestris</i> <b>Bacterial Leaf Spot</b> <i>Xanthomonas campestris</i> pv. <i>vitians</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	<p>Pink Rot – Begin application approximately 8 weeks before harvest and repeat on a 14-day interval. Apply QRD 146 as a directed spray in sufficient water to ensure thorough coverage of the base of the plants and the surrounding soil surface. Light irrigation following application to incorporate QRD 146 may improve disease control.</p> <p>Downy Mildew / Powdery Mildew / White Rust – For suppression, begin application when conditions are conducive to disease development and repeat on a 3- to 10-day interval or as needed. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides for Downy Mildew and Powdery Mildew control.</p> <p>Anthracnose - suppression - Begin application prior to disease development when environmental conditions and plant stage are conducive to rapid disease development and repeat on 7- to 10-day interval or as needed. Use the stated higher rates and shorter application intervals under heavy disease pressure.</p> <p>Bacterial Blight / Bacterial Leaf Spot- Begin applications when environmental conditions are conducive to disease development. Repeat on 3- to 10-day intervals or as needed.</p>
<b>Leafy Vegetables</b> continued	<b>Sclerotinia Head and Leaf Drop</b> <i>Sclerotinia</i> spp.	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	<p>For control of early <b>Sclerotinia Head and Leaf Drop</b>: Apply at planting or immediately following planting but prior to crop emergence as a 4 to 6 inch seed line treatment. Make a second application as a directed spray with multiple nozzles per each seed line in sufficient water to ensure thorough coverage of lower plant leaves and surrounding soil surface within 7 days of thinning. Repeat applications on 10- to 14-day intervals if conditions for disease development persist. Use the stated higher rates under conditions conducive to moderate to severe disease pressure. Light irrigation after application to incorporate the product may improve disease control.</p> <p>OR</p> <p>For control of <b>Sclerotinia Head and Leaf Drop</b>: Apply as a directed spray with multiple nozzles per each seed line in sufficient water to ensure thorough coverage of lower plant</p>

			leaves and surrounding soil surface within 7 days of thinning or transplanting. Repeat applications on 10- to 14-day intervals if conditions for disease development persist. Use the stated higher rates under conditions conducive to moderate to severe disease pressure. Light irrigation after application to incorporate the product may improve disease control.
<b>Root / Tuber</b> Carrot Potato Sweet Potato Beets Ginger Horseradish Radish Ginseng Turnip and other root/ tuber crops	<b>Black Rot/Black Crown Rot</b> <i>Alternaria</i> spp. <b>Alternaria Leaf Blight</b> <i>Alternaria dauci</i> <b>Bacterial Leaf Spot</b> <i>Xanthomonas campestris</i> pv. <i>carotae</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence or transplant and when conditions are conducive to disease development. Repeat on a 7- to 10-day interval or as needed. Use the stated higher rates and shorter intervals when conditions are conducive to rapid disease development. Apply in sufficient water to provide thorough coverage.
	<b>Bacterial Leaf Blight</b> <i>Xanthomonas campestris</i> <b>Downy Mildew</b> <i>Peronospora</i> spp. <b>Powdery Mildew</b> <i>Erysiphe</i> spp. <b>Gray Mold</b> <i>Botrytis</i> spp. <b>White Mold</b> <i>Sclerotinia sclerotiorum</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence or transplant and when conditions are conducive to disease development. Repeat on a 7- to 10-day interval or as needed. Use the stated higher rates and shorter intervals when conditions are conducive to rapid disease development. Thorough coverage is essential.
	<b>Early Blight</b> <i>Alternaria solani</i> <b>Late Blight</b> <i>Phytophthora infestans</i>	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	For suppression, begin application soon after emergence and when conditions are conducive to disease development. Repeat on a 5- to 7-day interval or as needed. For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides for Early and Late Blight control.

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Greenhouse Crops	Disease	Rate Lbs. [alternate: oz]/100 gallons spray mix	Application Instructions
Strawberry	<p><b>Powdery Mildew</b> <i>Sphaerotheca macularis</i> <i>Erysiphe</i> spp.</p> <p><b>Anthracnose</b> <i>Colletotrichum acutatum</i></p> <p><b>Botrytis</b> <i>Botrytis cinerea</i></p> <p><b>Gray Mold</b> <i>Botrytis</i> spp.</p> <p><b>Angular Leaf Spot</b> <i>Xanthomonas fragariae</i></p>	<p>½ - 3 [alternate: 8 - 48 oz]</p>	<p>Botrytis / Powdery Mildew - For suppression, begin application at or before flowering and repeat on a 7- to 10-day interval or as needed through harvest.</p> <p>Anthracnose – Begin application prior to disease development and repeat on a 7- to 10-day interval or as needed.</p> <p>Angular Leaf Spot - Begin application when conditions are conducive to disease development. Continue sprays at 7- to 10-day intervals or as needed. Use the stated higher rates and shorter intervals when conditions are conducive to rapid disease development.</p> <p>For all diseases - For improved performance, use QRD 146 in a tank mix or rotational program with other registered fungicides. Thorough coverage is essential. QRD 146 may be applied up to and including the day of harvest.</p>

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**FOR USE AS A SOIL TREATMENT ON SELECT AGRICULTURAL FIELD CROPS**

QRD 146 has a 0-Day PreHarvest Interval for all crops contained on this label.

Under moderate to severe disease pressure, for improved performance, increase rates and reduce spray intervals as stated or use QRD 146 in a tank mix or rotational program with other registered fungicides.

QRD 146 is a broad spectrum biofungicide for the prevention, suppression and control of soil borne diseases on a wide range of fruits and vegetables as well as cotton. QRD 146 enhances germination and plant growth by suppressing diseases caused by *Rhizoctonia*, *Pythium*, *Fusarium*, *Verticillium*, and *Phytophthora*.

**APPLICATION INSTRUCTIONS:**

**Soil Treatment At Planting:**

Use at planting, seeding, or transplant. Mix 0.25 lb. to 3 lb.[alternate: 4 - 48 oz] of QRD 146 in appropriate amount of water per acre. Use the stated higher application rates under conditions of heavy disease pressure. Apply finished mixture at a rate to thoroughly soak the growing media through the root zone (1 pint finished mixture / sq. ft for each 3 inches of soil depth) as a drench or directed spray using hand held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems. QRD 146 can be mixed with chemical fungicides registered for soil applications.

**Soil Treatment Through Irrigation:** Use at any stage of plant growth. Mix 0.25 lb. to 3 lb.[alternate: 4 - 48 oz] of QRD 146 in appropriate amount of water per acre. Use the stated higher application rates under conditions of heavy disease pressure. Optimal performance is obtained with preventative treatments repeated every 21 to 28 days throughout the growing cycle. QRD 146 can be mixed with chemical fungicides registered for soil applications.

**In-Furrow Applications:**

For in-furrow applications, apply QRD 146 as an in-furrow spray in 5 - 15 gallons of water at planting. Mount the spray nozzle so the spray is directed in the furrow just before the seeds are covered. Use the stated higher rates when the weather conditions are expected to be conducive for disease development, if the field has a history of disease problems, or if minimum/low till programs are in place.

See application rates tables for rates and application instructions.

**IN-FURROW APPLICATION RATES**

Rate per 1000 row feet	Product Per Acre (oz)						
oz. product	22" rows	30" rows	32" rows	34" rows	36" rows	38" rows	40" rows
0.3	6.5	4.8	4.5	4.3	4.0	3.8	3.6
3.3	78.4	57.5	53.9	50.8	48.0	45.5	43.1

40" = 13,068 row ft/acre, 38" = 13,754 row ft/acre, 36" = 14,520 row ft/acre, 34" = 15,374 row ft/acre, 32" = 16,315 row ft/acre, 30" = 17,424 row ft/acre, and 22" = 23,760 row ft/acre.

[Optional Rate Table:]

**IN-FURROW APPLICATION RATES**

Rate per 1000 row feet	Product Per Acre (1lb)						
oz. product	22" rows	30" rows	32" rows	34" rows	36" rows	38" rows	40" rows
0.3	0.41	0.30	0.28	0.27	0.25	0.24	0.23
3.3	4.90	3.59	3.37	3.17	3.00	2.84	2.70

40" = 13,068 row ft/acre, 38" = 13,754 row ft/acre, 36" = 14,520 row ft/acre, 34" = 15,374 row ft/acre, 32" = 16,315 row ft/acre, 30" = 17,424 row ft/acre, and 22" = 23,760 row ft/acre.

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**Application Rates of QRD 146 for Soil Uses in Field for Soilborne/Seedling Disease Control**

Crops	Disease	Rate	Application Instructions Soil Drench and In-furrow
<b>Brassica</b> Broccoli Cabbage Cauliflower Brussels Sprouts Collards Kale Mustard Greens Kohlrabi and other brassica crops	<i>Rhizoctonia</i> spp. <i>Pythium</i> spp. <i>Fusarium</i> spp. <i>Verticillium</i> spp. <i>Phytophthora</i> spp.	Soil Drench 0.25 to 3 lb. [alternate: 4 - 48 oz]/ acre	Soil Drench Uses: Field  Mix 0.25 lb. to 3 lb. [alternate: 4 - 48 oz] of QRD 146 in appropriate amount of water per acre. Use the stated higher application rates under conditions of heavy disease pressure.
<b>Bulb Vegetables</b> Onion Garlic Shallots and other bulb vegetables			Apply finished mixture at a rate to thoroughly soak the growing media through the root zone (1 pint finished mixture / sq. ft for each 3 inches of soil depth) as a drench or directed spray using hand held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems.
<b>Root / Tuber and            Corm Vegetables</b> Carrot Potato Sweet Potato Cassava Beets Ginger Horseradish Radish Ginseng Turnip and other root/ tuber and corm crops including those grown for seed production.			Begin applications at planting, during or after seeding, during or after transplanting and at any stage of plant growth. Optimal performance is obtained with preventative treatments repeated every 21 to 28 days throughout the growing cycle. QRD 146 can be mixed with chemical fungicides registered for soil applications.
<b>Fruiting            Vegetables</b>  Pepper Tomato Eggplant Ground Cherry Tomatillo Okra and other fruiting vegetables			In-furrow 0.3-3.3 oz / 1000 row feet
			See in-furrow application table for rates based on row width.

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Crops	Disease	Rate	Application Instructions In-furrow
<b>Corn</b> Sweet Corn Popcorn Seed Corn Silage Corn Field Corn and other corn crops	<i>Rhizoctonia</i> <i>spp.</i> <i>Pythium</i> spp. <i>Fusarium</i> spp. <i>Verticillium</i> spp. <i>Phytophthora</i> <i>spp.</i>	In-furrow 0.3 - 3.3 oz/ 1000 row feet	In-Furrow Applications:  For in-furrow applications, apply QRD 146 as an in-furrow spray in 5 - 15 gallons of water at planting. Mount the spray nozzle so the spray is directed in the furrow just before the seeds are covered. Use the stated higher rates when the weather conditions are expected to be conducive for disease development, if the field has a history of disease problems, of if minimum/low till programs are in place.
<b>Cotton</b>			See in-furrow application table for rates based on row width.
<b>Cucurbits</b> Cucumber Cantaloupe Melon Muskmelon Squash Watermelon and other cucurbit crops			See in-furrow application table for rates based on row width.
<b>Leafy Vegetables</b> Lettuce Celery Spinach Parsley Radicchio and other leafy vegetables			See in-furrow application table for rates based on row width.
<b>Legumes/            Vegetables            (succulent and            dried beans and            peas)</b> Bean Green beans Snap beans Shell beans Soybeans Dry Beans Garbanzo beans Lima beans Peas Chick peas Split peas Lentils and other legume / vegetable crops including those grown for seed production			See in-furrow application table for rates based on row width.

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**FOR USE ON ORNAMENTALS, TREES, SHRUBS, FLOWERS, BEDDING PLANTS, TROPICAL PLANTS (ORNAMENTALS - Poinsettia, Orchids, Dieffenbachia, Palms, Spathiphyllum, Raphiolepis, Aglaonema and FRUIT – Bananas, Mangos, Papaya), TURF, LAWNS, SOD, GOLF COURSES (GREENS, TEES, FAIRWAYS AND ROUGHS), SEEDLINGS, CONIFERS - [Agricultural Use], [Commercial], [Residential Use], [Reforestation]**

QRD 146 has a 0-Day PreHarvest Interval for all crops contained on this label.

Under moderate to severe disease pressure, for improved performance, increase rates and reduce spray intervals as stated or use QRD 146 in a tank mix or rotational program with other registered fungicides.

[As appropriate for uses:]

QRD 146 is a protectant fungicide for use indoors and outdoors for control of certain foliar diseases in the field, greenhouses [open or enclosed], interiorscape, residential and commercial landscapes, nurseries [open or enclosed], shade house environments, glasshouses, seedling production sites, golf courses (greens, tees, fairways, and roughs), forests, and forestry seedling production sites.

QRD 146 can be applied to ornamentals, trees, shrubs, flowers, annual and perennial bedding plants, potted flowers, cut flowers, tropical foliage, container grown trees and shrubs, forestry seedlings, turf, lawn, sod, golf courses (greens, tees, fairways, and roughs) and conifer production for reforestation purposes (greenhouses, shade houses, nurseries, indoors, outdoors, containers or field).

**[PLANTS EVALUATED FOR PHYTOTOXICITY]**

QRD 146 has been tested for phytotoxicity on [a number of] [the] ornamental species [listed below.] Since it is impossible to test all of the species and cultivars listed on this label under all conditions, it is recommended that a small-scale preliminary trial be conducted to check for sensitivity before using this product on a large number of plants, using the product in accordance with all label use directions.

**[TABLE OF PLANTS EVALUATED FOR PHYTOTOXICITY]**

**[Annual and Perennial Flowering Plants:]**

Alyssum	Asters	Azalea	Begonia	Calla lily
Chrysanthemum	Cyclamen	Dianthus	Dwarf Bee-Balm	Easter lily
Garden phlox	Geraniums	Gerbera	Golden star	
Hydrangea	Impatiens	Kalanchoe	Linaria	Lisianthus
Lobelia	Marigolds	Orchids	Pansies	Petunia
Poinsettia	Portulaca	Ranunculus	Roses	Salvia spp.
Snapdragons	Stock	Verbena spp.	Vinca	
Violas	Zinnia]			

**[Tropical foliage:]**

[Aglaonema	Dieffenbachia	Dracaena spp.	English Ivy
Hibiscus	Leatherleaf Fern	Spathiphyllum]	

**[Trees and Shrubs:]**

[Azalea	Boxwood	Crape myrtle	Dogwood	Gumpo azalea
Indian (India) Hawthorn	Japanese maple		Ligustrum japonicum	
Lilac	Loropetalum	Photinia	Rhododendron	
Rosaceae spp.	Soft Touch Holly	Spirea]		

**Foliar Application Use on Ornamentals, Trees, Shrubs, Flowers, Bedding Plants, Tropical Plants, Seedlings, Conifers:**

**APPLICATION INSTRUCTIONS:** Apply QRD 146 at rates ranging from 0.5 to 3 lbs. [alternate 8 – 48 oz] of product in 100 [- 300] gallons of water per acre. Make applications on a 3- to 10-day schedule. Begin applications when

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conditions favor disease development prior to the onset of disease. [Begin applications prior to or in the early stages of disease development.]

Under normal conditions, apply QRD 146 at a rate of 1 lbs. of product per 100 [- 300] gallons of spray solution per acre on a 7-day schedule. When conditions favor severe disease development, shorten the spray interval or use a higher rate as stated in the application table. Thorough coverage is essential for effective disease control. When more diluted or concentrated spray solutions are needed for the type of equipment being used, follow the "Use Rate Determination" section of this label. See application rate tables for more detailed application instructions.

**Application Rates for QRD 146 When Used as a Foliar Spray on  
Ornamentals, Trees, Shrubs, and Flowering Plants**

Crops	Disease	Rate lbs. [alternate: oz]/100 gallons spray mix	Application Instructions
<p><b>Ornamentals Trees, Shrubs, Flowering Plants, and Tropical Plants</b></p> <p>Field, Outdoors, Indoors, Greenhouses, and Nurseries</p> <p>Annuals Perennials Bedding plants Potted flowers Cut flowers Foliage plants Deciduous trees</p> <p>Deciduous shrubs</p> <p>Tropical foliage</p> <p>Container grown plants</p>	<p><b>Anthracnose</b> <i>Colletotrichum</i> spp.</p> <p><b>Bacteria</b> <i>Erwinia</i> spp. <i>Pseudomonas</i> spp. <i>Xanthomonas</i> spp.</p> <p><b>Black Spot of Rose</b> <i>Diplocarpon rosea</i></p> <p><b>Botrytis</b> <i>Botrytis cinerea</i></p> <p><b>Downy Mildew</b> <i>Peronospora</i> spp.</p> <p><b>Leaf Spots</b> <i>Alternaria</i> spp. <i>Cercospora</i> spp. <i>Entomosporium</i> spp. <i>Helminthosporium</i> spp. <i>Myrothecium</i> spp.</p> <p><b>Septoria</b> spp.</p> <p><b>Powdery Mildew</b> <i>Erysiphe</i> spp. <i>Oidium</i> spp. <i>Podosphaera</i> spp. <i>Sphaerotheca</i> spp.</p> <p><b>Phytophthora</b> spp.</p> <p><b>Rust</b> <i>Puccinia</i> spp.</p> <p><b>Scab</b> <i>Venturia</i> spp.</p>	<p>½ - 3 [alternate: 8 - 48 oz]</p>	<p>Indoors, Outdoors, Field, Greenhouse, Glasshouse and Nursery Grown Plants: Apply QRD 146 at rates ranging from ½ - 3 lbs. [alternate: 8 - 48 oz] of product in 100 [- 300] gallons of water per acre. Make applications on a 3- to 10-day schedule. Begin applications when conditions favor disease development prior to the onset of disease. [Begin applications prior to or in the early stages of disease development.]</p> <p>Under normal conditions, apply QRD 146 at a rate of 1 pounds [alternate: 16 oz] of product per 100 - 300 gallons of spray solution per acre on a 7-day schedule. When conditions favor severe disease development, shorten the spray interval or use a higher rate as stated. Thorough coverage is essential for effective disease control. When more diluted or concentrated spray solutions are needed for the type of equipment being used, follow the "Use Rate Determination" section of this label.</p>

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**Post Harvest Dip Use on Cut Flowers/Buds:**

**APPLICATION INSTRUCTIONS:** For post-harvest dip applications on cut flower crops, dip cut flowers/buds in a solution containing 1.5 to 12 oz of QRD 146 in 10 gallons of water soon after cutting. Immerse flowers for a period sufficient to provide thorough contact between cut flower/bud and the treatment solution. Use the stated higher rates under conditions of heavy disease pressure.

See application rates tables for rates and application instructions.

**Application Rates for QRD 146 for Post-Harvest Dip on Cut Flowers/Buds**

Crops	Disease	Rate oz./10 gallons	Application Instructions
Cut flowers	<b>Black Spot of Rose</b> <i>Diplocarpon rosea</i>  <b>Botrytis</b> <i>Botrytis cinerea</i>  <b>Downy Mildew</b> <i>Peronospora</i> spp.  <b>Powdery Mildew</b> <i>Erysiphe</i> spp. <i>Oidium</i> spp. <i>Podosphaera</i> spp. <i>Sphaerotheca</i> spp.	1.5 - 12	Dip cut flowers/buds in a solution containing 1.5 to 12 oz of QRD 146 in 10 gallons of water soon after cutting. Immerse flowers for a period sufficient to provide thorough contact between cut flower/bud and the treatment solution. Use the stated higher rates under conditions of heavy disease pressure.

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**Soil Drench Applications on Ornamentals, Trees, Shrubs, Flowers, Bedding Plants, Tropical Plants, Seedlings, Conifers, Fruits and Vegetables: [Agricultural], [Commercial], [Residential Use], [Indoors and Outdoors], [Greenhouses, Glasshouses, Nurseries], [Open and Enclosed]**

QRD 146 is a broad spectrum biofungicide for the prevention, suppression and control of soil borne diseases on a wide range of annual and perennial bedding plants, potted flowers, foliage plants, deciduous trees and shrubs, and fruits and vegetables grown in protected environments. QRD 146 enhances germination and plant growth by suppressing diseases caused by *Rhizoctonia*, *Pythium*, *Fusarium*, *Verticillium*, and *Phytophthora*.

**APPLICATION INSTRUCTIONS:** Mix 0.5 lb. to 3 lb. [alternate: 8 – 48 oz] of QRD 146 with 100 gallons of water. Use the stated higher application rates under conditions of heavy disease pressure. Apply finished mixture at a rate to thoroughly soak the growing media through the root zone (1 pint finished mixture / sq. ft. for each 3 inches of soil depth) as a drench or directed spray using hand held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler irrigation systems. Begin applications during or after seeding, sticking of cuttings or after transplanting to propagation beds, containers, pots or trays. Optimal performance is obtained with preventative treatments repeated every 21 – 28 days throughout the growing cycle. QRD 146 can be mixed with chemical fungicides registered for soil applications. See application rate tables for more detailed application instructions.

**Application Rates for QRD 146 When Used as a Soil Drench in Field, Greenhouses, Glasshouses, Shadehouses, or Nurseries [Outdoors and Indoors] [Open or Enclosed]**

Crops	Disease	Rate Lbs. [alternate: oz]/100 gallons spray mix	Application Instructions
Ornamentals Trees Shrubs Annuals Perennials  Flowering plants Tropical plants Bedding plants Container plants Potted plants Foliage plants  Deciduous trees Deciduous shrubs  Forestry Seedlings  Fruits Vegetables and other crops grown in greenhouses and open and enclosed nurseries	<i>Rhizoctonia</i> spp.  <i>Pythium</i> spp.  <i>Fusarium</i> spp.  <i>Verticillium</i> spp.  <i>Phytophthora</i> spp.	$\frac{1}{2}$ - 3 [alternate: 8 - 48 oz]	<p><b>Soil Drench Uses: Field, Greenhouses, Glasshouses, Shadehouses, Indoors/Outdoors, Open And Enclosed Nurseries</b></p> <p>Mix 0.5 lb. to 3 lb. [alternate: 8 - 48 oz] of QRD 146 with 100 gallons of water. Use the stated higher application rates under conditions of heavy disease pressure.</p> <p>Apply finished mixture at a rate to thoroughly soak the growing media through the root zone (1 pint finished mixture / sq. ft. for each 3 inches of soil depth) as a drench or directed spray using hand held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler irrigation systems. Begin applications during or after seeding, sticking of cuttings or after transplanting to propagation beds, containers, pots or trays. Optimal performance is obtained with preventative treatments repeated every 21 to 28 days throughout the growing cycle. QRD 146 can be mixed with chemical fungicides registered for soil applications.</p>

**Turf, Lawns, Sod, Golf Courses (Greens, Tees, Fairways, and Roughs), and Ornamental Turf Use: [Agricultural], [Commercial], [Residential Use]**

QRD 146 is a broad spectrum biofungicide for use in the prevention, suppression and aiding in control of turf and lawn diseases (Brown Patch, Dollar Spot, Powdery Mildew, Rust, Gray Leaf Spot and Anthracnose).

**APPLICATION INSTRUCTIONS:** Apply at the rate of 0.5 - 3 oz. [alternate: 8 - 48 oz] of QRD 146 per 1000 sq ft of surface area. Apply in sufficient water to provide thorough coverage, depending on the application equipment. Two gallons of water per 1000 sq ft of surface is commonly used. See application rate tables for more detailed application instructions.

**Application Rates for QRD 146 for Turf, Lawns, Sod, Golf Courses (Greens, Tees, Fairways and Roughs), and Ornamental Turf**

Crops	Disease	Rate oz/1000 sq ft of surface area	Application Instructions
Turf, Sod, Lawns, Golf Course, (Fairways, Roughs, Greens, Tees)  Seed production grasses, etc. Bluegrass Bentgrass Bermuda grass Dichondra Fescue Orchard grass Poa annua St. Augustine Ryegrass Zoysia Mixtures and other grasses or ornamental turf	<b>Brown Patch</b> <i>Rhizoctonia solani</i>  <b>Dollar Spot</b> <i>Lanzia spp.</i> <i>Moellerodiscus spp.</i> <i>Sclerotinia homeocarpa</i>  <b>Powdery Mildew</b> <i>Erysiphe graminis</i>  <b>Rust</b> <i>Puccinia spp.</i>  <b>Anthracnose</b> <i>Colletotrichum graminicola</i>  <b>Gray Leaf Spot</b> <i>Pyricularia grisea</i>	½ - 3 [alternate: 8 - 48 oz]	<p>Apply at the rate of 0.5 to 3 oz of QRD 146 per 1000 sq ft of surface area. Apply in sufficient water to provide thorough coverage, depending on the application equipment. Two gallons of water per 1000 sq ft of surface is commonly used.</p> <p>Begin applications when conditions are conducive to disease development. Continue applications on 7- to 10-day intervals or as needed. Under moderate to severe disease pressure, for improved performance, increase rates and reduce spray intervals as stated or use QRD 146 in a tank mix or rotational program with other registered fungicides.</p> <p>Aids in control of: Brown Patch, Dollar Spot, Powdery Mildew, Rust, Anthracnose and Gray Leaf Spot.</p> <p>[Optional/Alternate Statements / Examples of Mixing/Application Instructions are in Brackets below]</p> <p>[Mix at the rate of 0.25 to 1.5 oz of QRD 146 per gallon of water and apply spray solution at the rate of 2 gallons per 1000 sq ft. (equivalent to 0.5 to 3 oz per 1000 sq ft of turf).]</p> <p>[Mix at the rate of 0.5 oz. to 3 oz of QRD 146 per gallon of water and spray solution at the rate of one gallon per 1000 sq ft of turf (equivalent to 0.5 to 3 oz per 1000 sq ft of turf).]</p> <p>[Mix at the rate of 0.75 oz. of QRD 146 per gallon of water when included in a tank mix with other registered fungicides.]</p>

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**STORAGE AND DISPOSAL**

Do not contaminate water, food, or feed by storage and disposal.

**PESTICIDE STORAGE:** Store in a dry area inaccessible to children. Store in original containers only. Keep container closed when not in use.

**PESTICIDE DISPOSAL:** To avoid waste, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or disposal program (often such programs are run by state or local governments or by industry).

**CONTAINER DISPOSAL:**

[For 1000 lb. bulk bag with liner:]

Nonrefillable container. Do not reuse or refill this container. Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment, then offer for recycling if available or dispose of liner in a sanitary landfill or by incineration. Do not burn, unless allowed by state and local ordinances. If burned, stay out of smoke. If bulk bag is contaminated, dispose of it in the manner required for its liner.

[Paper and Plastic bags]:

Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment, then offer for recycling if available or dispose of empty bag in a sanitary landfill or by incineration. Do not burn, unless allowed by state and local ordinances. If burned, stay out of smoke.

[batch codes are sticker applied to the front panel of every label on every product container]

**IMPORTANT: READ BEFORE USE**

Read the entire Directions for Use, Conditions, Disclaimer of Warranties and Limitations of Liability before using this product. If terms are not acceptable, return the unopened product at once for a refund of the purchase price. By using this product, user or buyer accepts the following Conditions, Disclaimer of Warranties, and Limitations of Liability. These terms may only be modified by a written document signed by a duly authorized representative of Bayer CropScience LP.

**CONDITIONS:** The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Bayer CropScience LP. All such risks shall be assumed by the user or buyer.

**DISCLAIMER OF WARRANTIES:** TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BAYER CROPSCIENCE LP MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, THAT EXTEND BEYOND THE STATEMENTS MADE ON THIS LABEL. No agent of Bayer CropScience LP is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BAYER CROPSCIENCE LP DISCLAIMS ANY LIABILITY WHATSOEVER FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.

**LIMITATIONS OF LIABILITY:** TO THE EXTENT CONSISTENT WITH APPLICABLE LAW THE EXCLUSIVE REMEDY OF THE USER OR BUYER FOR ANY AND ALL LOSSES, INJURIES OR DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, WHETHER IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR OTHERWISE, SHALL NOT EXCEED THE PURCHASE PRICE PAID, OR AT BAYER CROPSCIENCE LP'S ELECTION, THE REPLACEMENT OF PRODUCT.

**NET CONTENTS:****PRODUCED FOR**

Bayer CropScience

**Bayer CropScience LP**  
P.O. Box 12014, 2 T.W. Alexander Drive  
Research Triangle Park, North Carolina 27709  
1-866-99BAYER (1-866-992-2937)

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# QRD 146

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WETTABLE POWDER BIOFUNGICIDE  
SUB-LABEL B

Agricultural Use – Mushroom Production Only

55/64

# QRD 146

[A Wettable Powder Biofungicide]  
 [Optional/Alternate Statement: "NOP Logo: For Organic Production"]  
 [Optional/Alternate Statement: "NOP Logo: Can be Used for Organic Production"]  
 [for Mushroom production use]  
 [For Agricultural Use]

<b>ACTIVE INGREDIENT:</b>	
QST 713 strain of <i>Bacillus subtilis</i> *	26.2%
<b>OTHER INGREDIENTS</b>	73.8%
<b>TOTAL:</b>	100.0%

\*Contains a minimum of  $1.31 \times 10^{10}$  cfu/g

EPA Reg. No. 264-1160

EPA Est.

## KEEP OUT OF REACH OF CHILDREN CAUTION

For MEDICAL And TRANSPORTATION Emergencies ONLY Call 24 Hours A Day 1-800-334-7577  
 For PRODUCT USE Information Call 1-866-99BAYER (1-866-992-2937)

### FIRST AID

<b>IF IN EYES:</b>	<ul style="list-style-type: none"> <li>• Hold eyes open and rinse slowly and gently with water for 15 - 20 minutes.</li> <li>• Remove contact lenses, if present after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF ON SKIN OR CLOTHING:</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin with plenty of water for 15 - 20 minutes.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>
<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. In case of emergency call toll free the Bayer CropScience Emergency Response Telephone No. 1-800-334-7577.</p>	

[Reference Statement for Booklets: For ADDITIONAL PRECAUTIONARY STATEMENTS and DIRECTIONS FOR USE: See Inside Booklet. See FIRST AID STATEMENT on the back panel.]

[See attached label booklet for First Aid, Precautionary Statements, Storage and Disposal Instructions and Directions for Use.]

[Peel back tab for First Aid and Precautionary Statements, Storage and Disposal Instructions and Directions for Use.]  
 [USE OF PRODUCT INDICATES ACCEPTANCE OF "CONDITIONS FOR SALE AND WARRANTY"]

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## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS & DOMESTIC ANIMALS

#### CAUTION

Causes moderate eye irritation. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

### PERSONAL PROTECTIVE EQUIPMENT

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

Mixers/loaders and applicators must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow manufacturer's instructions for cleaning and maintaining PPE. If no instructions are available, use detergent and hot water for washables. Keep and wash PPE separately from other laundry.

### [OPTIONAL: ENGINEERING CONTROLS]

[OPTIONAL STATEMENT: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides, the handler PPE requirements may be reduced or modified as specified in the WPS.]

[IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment break-down.]

### USER SAFETY RECOMMENDATIONS

Users should:

- Remove clothing/PPE immediately if pesticides get inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### ENVIRONMENTAL HAZARDS

For terrestrial uses: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate. Do not apply when weather conditions favor drift or runoff from treated areas.

### EMERGENCY INFORMATION

For emergencies such as leaks or spills, call 24-hour toll-free BAYER hotline at 1-800-334-7577.

### DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation. [For use only as described on this label. Not for isolation or deformulation. Do not culture.]

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### **AGRICULTURAL USE REQUIREMENTS**

Use this product only in accordance with its labeling and with the Worker Protection Standard 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries and greenhouses and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

**Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours.**

Exception: If the product is soil injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water is:

- coveralls
- waterproof gloves
- shoes plus socks

### **BASIC USE INFORMATION**

QRD 146 is a preventative product for the suppression of Green Mold in mushroom production. Mix QRD 146 with mushroom spawn grains, mushroom growing supplement or apply QRD 146 as a drench alone to the surface of mushroom beds, in alternating drench programs or in tank mixes with other registered mushroom production protection products. When used as a drench, apply QRD 146 with spray equipment commonly used for making ground applications and sprinkler/irrigation systems commonly used for chemigation in mushroom production. QRD 146 can be used for organic production.

### **INTEGRATED PEST MANAGEMENT (IPM)**

Integrate QRD 146 into an overall disease and pest management strategy whenever fungicide use is necessary. Follow practices known to reduce disease development. Consult local agricultural authorities for specific IPM strategies developed for your crop(s) and location.

Be sure use of this product conforms to resistance management strategies, which may include rotating and/or tank-mixing with other products with different modes of action.

### **USE RATE DETERMINATION**

For all treatments, carefully read and follow all label directions, use rates and restrictions. For treatment of mushroom spawn grains and growing supplement, use the stated maximum label rates when heavy disease development is anticipated. For drench applications, application of QRD 146 prior to or in the early stages of disease development provides the best suppression of Green Mold. Use the stated maximum label rates for conditions conducive to rapid disease development or when disease development is anticipated. For proper application, determine the number of square feet of bed surface to be treated and the label use rate. For drench applications, prepare only the amount of spray solution required to treat the measured square feet of bed surface. Accurate spray equipment calibration is essential prior to use.

### **PREHARVEST INTERVAL**

QRD 146 can be applied up to and including the day of harvest.

### **APPLICATION INSTRUCTIONS**

**GROUND:** For treatment of mushroom spawn grains and growing supplement, be sure to completely mix QRD 146 with gypsum, limestone or chalk according to Application Instructions and Dosages Table prior to mixing with mushroom spawn grains or growing supplement. Thorough mixture of the treated mushroom growing substrate is essential for effective disease suppression.

For drench applications, be sure to maintain agitation during mixing and application to assure uniform product suspension. Thorough coverage of beds is essential for effective disease suppression. QRD 146 can be applied with commonly used ground equipment: hose-end, pressurized, greenhouse and hand-held sprayers. To achieve good coverage, use proper spray pressure, gallonage per square feet of bed surface, nozzles, nozzle spacing and ground speed. Consult spray nozzle and accessory catalogues for specific information on proper equipment calibration.

**CHEMIGATION:** This product can be applied through sprinkler (solid set and hand move) or drip type irrigation systems. Refer to the Chemigation Directions for Use section of this label for general directions and precautions. Use the drench application rate as specified in the Application Instructions and Dosages Table of this label.

### MIXING INSTRUCTIONS

**MIXING:** For treatment of mushroom spawn grains and growing supplement, be sure to completely mix QRD 146 with gypsum, limestone or chalk according to Application Instructions and Dosages Table prior to mixing with mushroom spawn grains or growing supplement. Thorough mixture of the treated mushroom growing substrate is essential for effective disease suppression.

For drench applications, QRD 146 must be diluted with water. Partially fill the spray tank with clean water and begin agitation. Add the required amount of QRD 146 to the tank. Finish filling the tank to the necessary volume to obtain the proper spray concentration. It is critical that the spray solution be agitated during mixing and application to assure a uniform suspension. Do not allow spray mixture to stand overnight or for prolonged periods. Maintain a spray solution pH between 4.5 and 8.5.

QRD 146 may be tank-mixed with other registered pesticides to enhance mushroom disease control. This product cannot be mixed with any product with a prohibition against such mixing. When tank-mixing QRD 146 with any other registered pesticides, always read and follow all use directions, restrictions, and precautions of both QRD 146 and the tank mix partner(s). Use of the resulting tank mix must be in accordance with the more restrictive label limitations and precautions. Do not exceed label dosage rates.

**COMPATIBILITY:** Do not combine QRD 146 in the spray tank with pesticides, surfactants or fertilizers if there has been no previous experience or use of the combination to show it is physically compatible, effective and non-injurious under your use conditions.

QRD 146 is compatible with many commonly used pesticides, fertilizers, adjuvants and surfactants but has not been fully evaluated with all of these. To ensure compatibility of tank-mix combinations, evaluate them prior to use as follows: Using a suitable container, add proportional amounts of product to water. Add wettable powders first, followed by water dispersible granules, then by liquid flowables and lastly, emulsifiable concentrates. Mix thoroughly and let stand for at least five minutes. If the combination stays mixed or can be remixed, it is physically compatible. Test the combination on a small portion of the crop to be treated to ensure that a phytotoxic response will not occur as a result of application.

**ADDITIVES:** QRD 146 is compatible with a wide range of additives. Since the product is primarily a protectant, thorough coverage of the mushroom bed surface is required for effective product performance when used as a drench. When used to treat mushroom spawn grains and growing supplement, thorough mixing of the mushroom growing substrate is required for effective product performance.

### CHEMIGATION DIRECTIONS FOR USE

#### General Requirements:

- 1) Apply this product only through sprinkler (solid set and hand move) or drip type irrigation systems. Do not apply this product through any other type of irrigation system.
- 2) Crop injury or lack of effectiveness can result from non-uniform distribution of treated water.
- 3) Ensure that the irrigation system used is properly calibrated and if you have questions, call the State Extension Service specialists, the equipment manufacturer or other experts.
- 4) Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
- 5) A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make any necessary adjustments should the need arise.

### Requirements for Chemigation Systems Connected to Public Water Systems:

- 1) Public water supply means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of 25 individuals daily at least 60 days throughout the year.
- 2) Chemigation systems connected to the public water systems must contain a functional, reduced-pressure zone (RPZ), backflow preventer or the functional equivalent in the water supply upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top of the overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.
- 3) The pesticide injection pipeline must contain a functional, automatic, quick closing check valve to prevent the flow of fluid back towards the injection pump.
- 4) The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- 5) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being filled with a system interlock.
- 7) Do not apply when wind speed favors drift beyond the area intended for treatment
- 8) Remove scale, pesticide residues, and other foreign matter from the chemical supply tank and entire injector system. Flush with clean water. Failure to provide a clean tank, void of scale or residues may cause product to lose effectiveness or strength.
- 9) Do not combine QRD 146 with pesticides, surfactants or fertilizers for application through chemigation equipment unless prior experience has shown the combination physically compatible, effective and non-injurious under conditions of use. QRD 146 has not been fully evaluated for compatibility with all adjuvants or surfactants. Conduct a spray compatibility test if mixture with adjuvants or surfactants is planned.
- 10) Maintain agitation in the pesticide supply tank.
- 11) Apply QRD 146 during the last half of the water application.
- 12) Dilute QRD 146 in enough water to be able to draw through system for the last half of the water application.

### Sprinkler Chemigation Requirements:

- 1) The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
- 2) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 3) The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- 4) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 5) The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 7) Do not apply when wind speed favors drift beyond the area intended for treatment.
- 8) Remove scale, pesticide residues, and other foreign matter from the chemical supply tank and entire injector system. Flush with clean water. Failure to provide a clean tank, void of scale or residues may cause product to lose effectiveness or strength.
- 9) Do not combine QRD 146 with pesticides, surfactants or fertilizers for application through chemigation equipment unless prior experience has shown the combination physically compatible, effective and non-injurious under conditions of use. QRD 146 has not been fully evaluated for compatibility with all adjuvants or surfactants. Conduct a spray compatibility test if mixture with adjuvants or surfactants is planned.

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### **Solid-set and Hand Move Irrigation Equipment:**

- Determine acreage (square footage) covered by sprinkler.
- Fill injector solution tank with water and adjust flow rate to use contents over a 10- to 30-minute interval.
- Determine the amount of QRD 146 fungicide required to treat area.
- Add the required amount of QRD 146 fungicide into the same quantity of water used to calibrate the injection equipment.
- Maintain constant solution tank agitation during the injection period.
- Operate system at normal pressures recommended by the manufacturer of the injection equipment and used for the time interval established during calibration.
- Inject QRD 146 fungicide at the end of the irrigation cycle or as a separate application to maximize foliar fungicide retention.
- Stop injection equipment after treatment is completed. Continue to operate the system until QRD 146 fungicide solution has cleared the last sprinkler head.

### **Drip Chemigation Requirements:**

- 1) The system must contain a functional check valve, vacuum relief valve and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
- 2) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 3) The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- 4) The system must contain functional inter-locking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 5) The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 7) Remove scale, pesticide residues, and other foreign matter from the chemical supply tank and entire injector system. Flush with clean water. Failure to provide a clean tank, void of scale or residues may cause product to lose effectiveness or strength.
- 8) Do not combine QRD 146 with pesticides, surfactants or fertilizers for application through chemigation equipment unless prior experience has shown the combination physically compatible, effective and non-injurious under conditions of use. QRD 146 has not been fully evaluated for compatibility with all adjuvants or surfactants. Conduct a spray compatibility test if mixture with adjuvants or surfactants is planned.
- 9) Maintain agitation in the pesticide supply tank.
- 10) Apply QRD 146 during the last half of the water application.
- 11) Dilute QRD 146 in enough water to be able to draw through system for the last half of the water application.

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**FOR USE AS A MIX WITH MUSHROOM SPAWN GRAINS OR MUSHROOM GROWING SUPPLEMENT AND AS A DRENCH FOR MUSHROOM GROWING BEDS**

QRD 146 has a 0-Day PreHarvest Interval for all crops contained on this label.  
If higher disease pressure is anticipated, use the stated higher dosage.

Application Instructions and Dosages of QRD 146 for Mushroom Production		
Crop	Disease	Application Instructions and Dosage
Mushroom spawn grains	Green Mold <i>Trichoderma harzianum</i>	For suppression of Green Mold in mushroom spawning media: Thoroughly mix 2.5 to 10 lbs. of QRD 146 with 80 to 100 lbs. of gypsum, limestone or chalk. Use this mixture to coat spawn grains (approximately 1,600 units) before mixing the spawn into the mushroom growing substrate. Apply treated spawn to 8,000 square feet of bed surface at spawning.
Mushroom growing supplement	Green Mold <i>Trichoderma harzianum</i>	For suppression of Green Mold in mushroom growing supplement: Thoroughly mix 2.5 to 10 lbs. of QRD 146 with 80 to 100 lbs. of gypsum, limestone or chalk. Use this mixture to coat supplement (approximately 2,000 lbs.) before mixing the supplement into the mushroom growing substrate. Apply treated supplement to 8,000 square feet of bed surface at spawning.
Mushroom growing beds	Green Mold <i>Trichoderma harzianum</i>	For suppression of Green Mold on the surface of mushroom beds: Apply 2.5 to 10 lbs. QRD 146 in 150 gallons of irrigation water as a drench to 8,000 square feet of bed surface at casing before 1 <sup>st</sup> flush, between 1 <sup>st</sup> and 2 <sup>nd</sup> flush and/or between 2 <sup>nd</sup> and 3 <sup>rd</sup> flush according to disease pressure. Maintain adequate circulation in the irrigation tank.

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## STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage and disposal.

**PESTICIDE STORAGE:** Store in a dry area inaccessible to children. Store in original containers only. Keep container closed when not in use.

**PESTICIDE DISPOSAL:** To avoid waste, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or disposal program (often such programs are run by state or local governments or by industry).

**CONTAINER DISPOSAL:**

[For 1000 lb. bulk bag with liner:]

Nonrefillable container. Do not reuse or refill this container. Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment, then offer for recycling if available, or dispose of liner in a sanitary landfill or by incineration. Do not burn, unless allowed by state and local ordinances. If burned, stay out of smoke. If bulk bag is contaminated, dispose of it in the manner required for its liner.

[Paper and Plastic bags:]

Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment, then offer for recycling if available or dispose of empty bag in a sanitary landfill or by incineration. Do not burn, unless allowed by state and local ordinances. If burned, stay out of smoke.

[batch codes are sticker applied to the front panel of every label on every product container]

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### IMPORTANT: READ BEFORE USE

Read the entire Directions for Use, Conditions, Disclaimer of Warranties and Limitations of Liability before using this product. If terms are not acceptable, return the unopened product at once for a refund of the purchase price. By using this product, user or buyer accepts the following Conditions, Disclaimer of Warranties, and Limitations of Liability. These terms may only be modified by a written document signed by a duly authorized representative of Bayer CropScience LP.

**CONDITIONS:** The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Bayer CropScience LP. All such risks shall be assumed by the user or buyer.

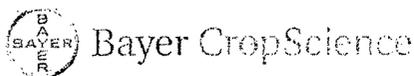
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**LIMITATIONS OF LIABILITY:** TO THE EXTENT CONSISTENT WITH APPLICABLE LAW THE EXCLUSIVE REMEDY OF THE USER OR BUYER FOR ANY AND ALL LOSSES, INJURIES OR DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, WHETHER IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR OTHERWISE, SHALL NOT EXCEED THE PURCHASE PRICE PAID, OR AT BAYER CROPSCIENCE LP'S ELECTION, THE REPLACEMENT OF PRODUCT.

### NET CONTENTS:



### PRODUCED FOR



**Bayer CropScience LP**  
**P.O. Box 12014, 2 T.W. Alexander Drive**  
**Research Triangle Park, North Carolina 27709**  
**1-866-99BAYER (1-866-992-2937)**  
**QRD 146 (PENDING) 11/20/2013, 02/13/14, 06/18/2014**



Bayer CropScience

Bayer CropScience LP  
 P.O. Box 12014  
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 1-866-99BAYER (1-866-992-2937)

QRD 146  
 [ABN: SERENADE® OPTIMUM]

EPA Reg. No. 264-1160

For Use On: Cucurbits

*This supplemental label expires on 02/27/2017 and must not be used or distributed after this date.*

**Supplemental Label**

**KEEP OUT OF REACH OF CHILDREN  
 CAUTION**

**DIRECTIONS FOR USE**

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation. Read this label and the product package label before using this product. This Supplemental Label must be in the possession of the user at the time of pesticide application. Follow all applicable directions, restrictions, Worker Protection Standard requirements, and precautions on the product label for QRD 146 attached to the container.

**USE DIRECTIONS FOR SPECIFIC AGRICULTURAL FIELD CROPS ONLY**

Crops	Disease	Rate Lbs./acre [alternate: oz/acre]	Application Instructions
Cucurbits Cucumber Cantaloupe Melon Muskmelon Squash Watermelon and other cucurbit crops	<b>Powdery Mildew</b> <i>Erysiphe</i> spp. <i>Sphaerotheca</i> spp. <b>Gummy Stem Blight</b> <i>Didymella bryoniae</i> <i>Phoma cucurbitacearum</i> <b>Angular Leaf Spot</b> <i>Pseudomonas syringae</i> <b>Anthracnose</b> <i>Colletotrichum lagenarium</i> <b>Downy Mildew</b> <i>Pseudoperonospora cubensis</i> <b>Bacterial Fruit Blotch</b> <i>Acidovorax avenae</i>	½ - 3 [alternate: 8 - 48 oz]	Begin application soon after emergence or transplant and when conditions are conducive to disease development. Repeat on 7- to 10-day interval or as needed. When environmental conditions and plant stage are conducive to rapid disease development, use QRD 146 in a rotational program with other registered fungicides.

For **MEDICAL** and **TRANSPORTATION** Emergencies **ONLY** Call 24 Hours A Day 1-800-334-7577  
 For **PRODUCT USE** Information Call 1-866-99BAYER (1-866-992-2937)

*As with any crop-protection product, always read and follow label directions.  
 For additional information call toll-free 1-866-99BAYER (1-866-992-2937).*

**ACCEPTED**

JUN 19 2014

Under the Federal Insecticide, Fungicide,  
 and Rodenticide Act, as amended, for  
 the pesticide registered under  
 EPA Reg. No. 264-1160

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